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Technical Men Convene at Kalamazoo, Mich.

Fall Meeting Attracts More Than 200 Delegates From Various Sections of United States and Canada and Proves Decidedly Successful—Numerous Interesting Addresses Rendered By Leading Authorities and Vital Topics Discussed—Technologists Club Admitted Into Full Membership and Forced Into Local Division

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., September 26, 1931.—The Fall meeting of the Technical Association of the Pulp and Paper Industry, in session here for the past three days, closed this afternoon. Despite the fact that the depression had the effect of reducing the list of delegates to slightly over 200, the entire gathering has been a decided success. It was thoroughly representative of this branch of the paper industry and brought to Kalamazoo men from all the Great Lakes, North Central, Atlantic Coast and New England states and Canada.

The TAPPI executive committee was present in seven out of its ten members, including M. A. Krimmell, Hammermill Paper Company, chairman; Allen Abrams, Marathon Paper Mills, vice chairman; R. G. MacDonald, TAPPI, secretary-treasurer; C. C. Heritage, Oxford Paper Company; W. O. Johnson, Strathmore Paper Company; J. H. Slater, Escanaba Paper Company, and J. F. Rhoades, Mead Corporation.

They had a special interest in the Kalamazoo convention, due to the fact that at the Friday evening dinner session, the Paper Technologists Club of this city, was admitted to full membership in the TAPPI and in the future will be known as the Kalamazoo Division. The officers of the local unit are: Chairman, Maxwell D. Bardeen, Lee Paper Company; vice chairman, W. Kent Kidder, Allied Paper Mills; secretary-treasurer, Harold R. Miller, Paper Makers Chemical Company. The Kalamazoo Division has 40 members in good standing and is credited with some splendid work since its organization back in 1927. Ivar Lundbeck, organizer of the club and its first president, has returned to his native land, Sweden.

Heavy Program Presented

The program was a heavy one, mornings and afternoons of the three days being devoted to the consideration of topics directly interesting members of the technical division. Three papers were offered at the opening session in the Columbia Hotel. They are: "Sulphate of Alumina and the Alums," J. J. Healy, Jr.; "A study on the bleaching of Kraft Pulp," Dr. Otto Kress and Roy L. Davis, also a laboratory procedure for the determination of the sizing ability and efficiency of beater sizing agents.

Thursday afternoon J. K. Speicher presented a picture on "The Story of Nitrocellulose" and H. G. Noyes, of the committee on education, read a paper on "Determination of Training Problems in the Pulp and Paper Industry."

Session Held at Parchment Village

Friday the convention transferred its activities to Parchment village, home of the Kalamazoo Vegetable Parchment Company. Lunch was served in the Parchment community house, with W. Kent Kidder, of the Allied Paper Mills, presiding at this event. The program for the day included: "De-Inking Wastes," C. C. Irving; "De-Inking Waste Paper Stock," C. A. Shubert; "Steam Requirements for the De-Inking Process," E. G. Milham; "The Re-use of Relief and Waste Liquors in Sulphate Cooking Acid," C. H. Chidester, C. E. Hrubesky and J. N. McGovern; "Technical Co-operation in the Development of Cost Standards in the Paper Industry," Thomas H. Burke; "Air Conditioning in the Paper Industry," W. G. Schlichting and "The Estimation of Cellulose in Pulps by the Kurschner-Hoffer Alcoholic-Nitric Acid Method."

Busy Day Spent at Gull Lake Country Club

Saturday, last day of the convention, saw the entire delegation out at Gull Lake Country Club and a busy day it proved to be. No less than eight papers were on the day's card. These included: "A Comparison Between Flint Pebbles and Porcelain Balls as a Means of Hydrating in the Pebble Mill Test," F. C. Peterson; "Research Program on Use Requirements of Paper," P. K. Baird; "The Relation of Strength, Properties and Fiber Properties in Paper," R. H. Doughty; "Some Notes on Loss in Yield and Quality of Pulp as Occasioned by Re-cooking the Same in Digesters, which were not Blown Clean," Dr. Otto Kress, Harry J. Irwin and Karl L. Buff; "Hydration Measurements by the Boiling Method," T. R. LeCompte; "Measuring the Efficiency and Proving the Value of the Chemical Engineer," H. C. Bradford; "Measurement of Opacity in Paper," Dr. M. N. Davis, and "Chromium-Nickel Castings in the Sulphite Industry," B. S. Summers and J. D. Corfield, E. F. Whittington, of the Sutherland Paper Company, presided at the luncheon session at the Gull Lake Country Club.

In addition to this long list of topics of a serious nature that had to be considered, the delegates were offered time

to relax. Special trips were made through the mills of the Kalamazoo Vegetable Parchment Company, Rex Paper Company and Hawthorne Paper Company. Two informal dinners were also given. Thursday evening at the Columbia Hotel, with R. A. Hayward, executive chairman, presiding, there was an address by Jacob L. Crane, of Chicago, on "Economic and Social Conditions in Russia and China." Mayor S. R. Light welcomed the convention to Kalamazoo, and M. A. Krimmell, chairman of the TAPPI, responded.

The Friday evening dinner in addition to the induction of the local club into the TAPPI, was featured by an address on the "Cycles of Civilization," given by Dr. E. D. Henderson, of the University of Michigan. W. J. Lawrence, president of the Paper Makers Chemical Corporation, presided, and Dr. Dwight B. Waldo, president of Western States Teachers College, acted as toastmaster.

Opportunity was also afforded for golf. Courses of the Maple Hills Golf Club and the Gull Lake Country Club were thrown open to the visitors.

Ladies who attended the convention were well taken care of with luncheons, dinners, bridge and many other forms of entertainment. The ladies' entertainment committee consisted of Mrs. E. F. Whittington, Mrs. F. B. Libby, Mrs. R. A. Hayward, Mrs. W. Kent Kidder and Mrs. W. J. Lawrence.

The committees in charge of the convention consisted of: General chairman, Ralph A. Hayward; administration, W. J. Lawrence, J. C. Wood, A. C. Dreshfield; publicity, E. J. Turner, W. Kent Kidder; arrangements, C. E. Mueller, E. G. Milham, H. C. Bradford, F. D. Libby; program, E. F. Whittington, M. D. Bardeen, H. C. Bradford, C. C. Schneider.

TAPPI Executive Committee Flies to Meeting

Since it was necessary for the officers of the Technical Association of the Pulp and Paper Industry attending the dedication service of the Institute of Paper Chemistry at Appleton, Wis., September 23, as well as the fall meeting of the Association at Kalamazoo on the 24th, arrangements were made to transport the committee and other members from Appleton to Kalamazoo by airplane. The flight was made in the ten passenger tri-motor Ford plane formerly owned by the Nekoosa-Edwards Paper Company. The flight took less than two hours.

Those Who Attended

The complete roster of delegates follows:

RALPH HAYWARD
Vice Pres., Kalamazoo Vegetable Parchment Co.
General Chairman TAPPI Fall Meeting

Richard T Anderson, Paterson Parchment Paper Company, Passaic, N. J.

Allen Abrams, Marathon Paper Mills Company, Wausau, Wis.

O. L. Bergen, G. D. Jensen Company, New York City.

Eugene N. Bechard, Eastwood Corporation, Belleville, N. J.

Henry F. Bigelow, Jr., Weyerhaeser Timber Company, Pulp Division, Clinton, Mass.

Bachrach
C. J. WEST
National Research Council Chairman TAPPI
Abstracts and Bibliography Committee

Blank & Stoller, Inc.
E. F. BEARCE
Vice Pres., Chillicothe Paper Co. Chairman
TAPPI Equipment Committee

L. M. Booth, Booth Chemical Company, Box 203, Elizabeth, N. J.

Garrett D. Bowne, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

Harry Bradford, Rex Paper Company, Kalamazoo, Mich.

P. D. Bradly, Fort Howard Paper Company, Green Bay, Wis.

Worthen E. Barwn, Pejepscot Paper Company, Brunswick, Me.

H. S. Bristol, International Paper Company, Niagara Falls, N. Y.

Arthur M. Brooks, Raffold Company of America, Andover, Mass.

C. L. Bachelder, Paper Makers Chemical Corporation, Kalamazoo, Mich.

C. M. Baker, American Paper and Pulp Association, Madison, Wis.

M. D. Bardeen, Lee Paper Company, Vicksburg, Mich.

Raymond L. Barton, Michigan Paper Company, Plainwell, Mich.

J. Bauman, Kalamazoo Vegetable Parchment Company, Parchment, Mich.

E. F. Bearce, Chillicothe Paper Company, Chillicothe, Ohio.

R. S. Baker, Consulting Engineer, Ottawa, Ontario.

G. H. Chidester, Forest Products Laboratory, Madison, Wis.

C. E. Curran, Forest Products Laboratory, Madison, Wis.

Windfield Crouch, Rex Paper Company, Kalamazoo, Mich.

C. G. Crofoot, Wallace & Tierman Company, Detroit, Mich.

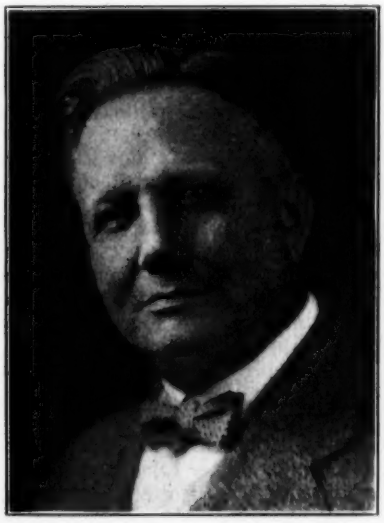
S. V. Cottrell, National Aniline and Chemical Company, Chicago, Ill.

John Cornell, *The Paper Mill*, New York City.

N. C. Cooper, Roessler & Hasslacher Chemical Company, Niagara Falls, N. Y.

M. H. Coombs, Kalamazoo Tank and Silo Company, Kalamazoo, Mich.

C. M. Connor Electro Bleaching Gas Company, New York, N. Y.



Bachrach W. O. JOHNSON

Gen. Mgr., Strathmore Paper Co. TAPPI Executive Committee

James Coghill, Noble Wood Machine Company, Hoosick Fall, N. Y.

A. G. Cofrin, Fort Howard Paper Company, Green Bay, Wis.

Walter C. Christensen, Hoberg Paper and Fibre Company, Green Bay, Wis.

C. J. Christiansen, Fibre Making Processes, Inc., Chicago, Ill.

C. H. Champion, R. T. Vanderbilt Company, New York, N. Y.

M. S. Clark, Mathieson Alkali Works, Inc., Chicago, Ill.

A. B. Clark, J. O. Ross Engineering Corporation, New York, N. Y.

Harvey P. Cannon, Container Corporation of America, Manayunk, Philadelphia.

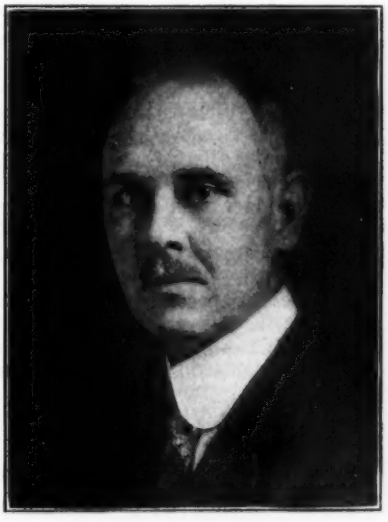
TAPPI COMMITTEE FLIES TO KALAMAZOO

STANDING LEFT TO RIGHT: R. G. Macdonald, Secretary of TAPPI; Joseph Slater, Escanaba Paper Company; Helen U. Kiely, American Writing Paper Company; R. H. Stevens, Bogalusa Paper Company; M. A. Krimmel, Hammermill Paper Company; W. Boyd Campbell, Canadian Forest Products Laboratories; J. F. Rhoades, Mead Corporation; KNEELING: Westbrook Steele, Institute of Paper Chemistry, and Allen Abrams, Marathon Paper Mills.

W. Boyd Campbell, Forest Products Laboratory, Montreal.

Jas. A. Cameron, Cameron Machine Company, Brooklyn, N. Y.

O. W. Callighan, Edgar Bros. Company, New York, N. Y.



Bachrach ROGER C. GRIFFIN

Treasurer Arthur D. Little, Inc. Chairman TAPPI Non-Fibrous Materials Testing Committee

Myrl N. Davis, Kimberly-Clark Corporation, Neenah, Wis.

Theo. W. Dunn, Dunn Sulphite Paper Company, Port Huron, Mich.

Geo. C. Dunn, Dunn Sulphite Paper Company, Port Huron, Mich.

J. R. Dufford, Paterson Parchment Paper Company, Paterson, N. J.
Arthur C. Dreshfield, Paper Makers Chemical Corporation, Kalamazoo, Mich.
C. W. Drake, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.
A. Scott Dowd, *The Paper Industry*, Chicago, Ill.
Randall H. Doughty, U. S. Forest Products Laboratory, Madison, Wis.
W. H. Donaldson, Perkins-Goodwin Company, New York.
James Donaldson, V. P. Stora Kopparberg Corporation, New York.
Dr. G. F. Des Autels, Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich.
V. S. Denison, Beloit Iron Works.
Harold M. Eastman, Paper Makers Chemical Company, Kalamazoo, Mich.
Frank W. Egan, J. O. Ross Engineering Corporation, New York, N. Y.
Roger J. Egan, Bulkley, Dunton & Co., New York.
Frank B. Eilers, Eastwood Corporation, Belleville, N. J.
Robert L. Eminger, Superintendent's Association, Miamisburg, Ohio.
Ernest Erickson, Lagerloef Trading Company, New York, N. Y.
Myron F. Flotow, French Paper Company, Niles, Mich.
Norman H. Foley, Marathon Paper Mills Company, Menasha, Wis.
W. A. Furst, Westinghouse Electric and Manufacturing Company, Detroit, Mich.
Frank D. Frampton, Hopper Paper Company, Taylorville, Ill.
James A. Foxgrover, Paper Makers Chemical Corporation, Kalamazoo, Mich.
Geo. W. Forrester, Pulp Bleaching Corporation, New York, N. Y.
Roger C. Griffin, Arthur D.Little, Inc., Cambridge, Mass.
D. H. Greene, Jr., Wisconsin Tissue Mills, Menasha, Wis.
W. M. Green, Leed & Northrup Company, Philadelphia, Pa.
L. L. Griffiths, Jr., Victor G. Bloede Company, Inc., Baltimore, Md.
Phillip H. Goldsmith, Black-Clawson Company, Hamilton, Ohio.
G. A. Hermann, Hermann Manufacturing Company, Lancaster, Ohio.
Reginald Hurst, Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich.
Robert Haggerson, Paper Makers Chemical Corporation, Kalamazoo, Mich.
James L. Hayes, Bemis Bros. Bag Company, Peoria, Ill.
R. A. Hayward, Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich.
Gerald Haywood, West Virginia Paper and Pulp Company, Westerport, Md.
J. J. Healy, Jr., Merrimac Chemical Company, Boston, Mass.
V. G. Heinmeuller, Kalbfleisch Corporation, Kalamazoo, Mich.
Henry F. Heller, Paper Makers Chemical Corporation, Kalamazoo, Mich.
C. C. Heritage, Oxford Paper Company, Rumford, Me.
J. M. Hibbs, Vera Chemical Company, Burlington, Ont.
Gilbert Hill, Gilbert Paper Company, Menasha, Wis.
R. W. Hooker, Hooker Electrochemical Company, New York, N. Y.
R. F. Irwin, Paper Makers Chemical Corporation, Kalamazoo, Mich.
G. I. Ingling, Kalamazoo Paper Company, Kalamazoo, Mich.
Harold G. Ingraham, Bird Machine Company, Chicago, Ill.
Chester C. Irving, Falulah Paper Company, Fitchburg, Mass.
B. Steel, Cutler-Hammer, Inc., Grand Rapids, Mich.
S. B. Jones, West Virginia Pulp and Paper Co.
Harry Jacqmin, Fort Howard Paper Company.
H. S. Johnston, Fox River Paper Company.
W. O. Johnson, Strathmore Paper Company.
J. W. Johnson, Michigan Steel Castings Company.
W. K. Kidder, Allied Paper Mills.
Edward Kormin, Heller & Merz Corporation.
Wm. Kottman, Kalamazoo Vegetable Parchment Company.
Otto Kress, Institute Paper Chemistry.
M. A. Krimmel, Hammermill Paper Company.
Robert E. Krudener, Lagerloef Trading Company.
B. E. Keifer, Timken Roller Bearing Company.
W. S. Kidd, E. B. Eddy Company.
W. J. Lawrence, Paper Makers Chemical Corporation.
Frank Libby, Kalamazoo Vegetable Parchment Company.
John S. Little, Western Electric Company.
F. H. Lueders, Seybold Company.
A. J. Luth, Nekoosa-Edwards Paper Company.
John N. McGovern, Forest Products Laboratory.
C. J. McMahon, Appleton Woolen Mills.
R. G. Macdonald, Technical Association of the Pulp & Paper Industry.
G. M. Markle, E. I. duPont de Nemours & Company.
Hoke Martin, Mathieson Alkali Works, Inc.
R. B. Martin, Wallace & Tiernan Company.
M. F. McCombs, Electro Bleaching Gas Company.
Geo. H. McGregor, Institute of Paper Chemistry.
A. E. Montgomery, J. O. Ross Engineering Corporation.
H. A. Morrison, Oliver United Filters, Inc.
C. E. Mueller, Paper Makers Chemical Corporation.
D. C. Murchison, Howell & Murchison, Inc.
Harold R. Murdock, Champion Fibre Company.
William L. Nixon, Philadelphia, Pa.
John J. Nylund, General Dyestuff Corporation.
J. J. O'Connor, Mead Corporation.
George A. Oechsle, Dill & Collins Company.
Alfred Perlick, Kalamazoo Vegetable Parchment Company.
Herbert Philipp, Solvay Process Company.
Arthur Phillips, Jr., Solvay Process Company.
H. G. Potts, Pennsylvania Salt Manufacturing Company.
H. A. Rothchild, Kimberly Clark Corporation.
Rex W. Radsch, Clinton Corn Syrup Refining Company.
R. M. Radsch, Appleton Machine Company.
C. M. Rhodes, Rap-In-Wax Paper Company.
Herman G. Rappolt, J. O. Ross Engineering Corporation.
Michael Redmond, Kalamazoo Paper Company.
John Ruinvelt, Rex Paper Company.
R. R. Remick, Iliff-Bruff Chemical Company.
Maurice O. Reuben, York Haven Paper Company.
John F. Rhodes, Mead Corporation.
R. W. Richardson, E. I. duPont de Nemours.
Burr H. Ritter, Hooker Electrochemical Company.
Charles W. Rivise, Patent Attorney.
Ernest B. Robert, Bemis Bros. Bag Company.
William G. Russell, American Writing Paper Company, Inc.
J. Richter Salvesen, Marathon Paper Mills.
F. A. Simmonds, Forest Products Laboratory.

Carl C. Schneider, Hawthorne Paper Company.
Dr. H. C. Schwalbe, Dill & Collins Company.
B. W. Schribener, Bureau of Standards.
Dr. M. S. Shenk, National Adhesives Corporation.
Chas. A. Shubert, Dill & Collins Company.
Wang Sigmund, Canadian International Paper Company.
Harold Sinclair, Bennett, Inc.
Joseph H. Slater, Escanaba Paper Company.
C. B. Smith, Huron Milling Company.
John K. Speicher, Hercules Powder Company.
G. K. Spence, Castanea Paper Company.
J. A. Staidl, Thilmany Pulp and Paper Company.
R. H. Stevens, Bogalusa Paper Company, Inc.
Harold F. Stoll, Paper Makers Chemical Corporation.
B. S. Summers, Detroit, Mich.
C. R. Swett.
P. D. Switzen, Moore & White Company.
Geo. H. Spencer, E. D. Jones & Sons Company.
V. M. Stouck, Castanea Paper Company.
J. A. Turner, E. I. duPont Company.
E. J. Turner, Paper Makers Chemical Corporation.
John Traquair, The Mead Corporation.
William S. Taylor, Kalbfleisch Corporation.
Milford J. Taylor, Hoberg Paper and Fibre Company.
I. R. Valentine, Jr., Lee Paper Company.
H. L. Vanderberg, Staley Sales Corporation.
R. W. Van Kirk, Penick & Ford Sales Company.
L. R. Verdon, Kalbfleisch Corporation.
C. Vicario, Nash Engineering Company.
R. S. von Hazmburg, Scott Paper Company.
Joseph H. Wallace, Black-Clawson Company.
Wm. J. Weed, Niagara Alkali Company.
O. F. Wells, Boston, Mass.
Sidney D. Wells, Nekoosa-Edwards Paper Company.
E. F. Whittington, Sutherland Paper Company.
Frederick Wierk, Johnson & Wierk.
Earl R. Williams, Neenah Paper Company.
John C. Wood, Kalamazoo Vegetable Parchment Company.
Mrs. R. W. Van Kirk, Kalamazoo, Mich.
Mrs. Frank B. Eilers, Kalamazoo, Mich.
Mrs. Rex. W. Radsch, Clinton, Ia.
Mrs. R. M. Radsch, Appleton, Wis.
Mrs. Angelia Whittington, Kalamazoo, Mich.
Mrs. Carl C. Schneider, Kalamazoo, Mich.
Mrs. R. R. Renick, Hoopeston, Ill.
Mrs. James J. O'Connor, Chillicothe, Ohio.
Mrs. Elbert G. Milham, Kalamazoo, Mich.
Mrs. A. J. Luth, Port Edwards, Wis.
Mrs. W. J. Lawrence, Kalamazoo, Mich.
Miss Helen A. Kiely, American Writing Paper Company, Holyoke, Mass.
Mrs. W. K. Kidder, Kalamazoo, Mich.
Mrs. R. A. Hayward, Parchment, Mich.
Mrs. Frank D. Frampton, Taylorville, Ill.
Mrs. Roger J. Egan, New York.
Mrs. Arthur Dreshfield, Kalamazoo, Mich.
Mrs. V. S. Denison, Sandusky, Ohio.
Mrs. A. G. Cofrin, Green Bay, Wis.
Mrs. Harvey P. Cannon, Germantown, Philadelphia. Pa.
Mrs. H. C. Bradford, Kalamazoo, Mich.
Mrs. E. P. Bearce, Chillicothe, Ohio.
Mrs. C. L. Bachelder, Kalamazoo, Mich.
Mrs. Allen Abrams, Wausau, Wis.
Mrs. Margaret Wierk, New York, New York.
Mrs. John C. Wood, Parchment, Mich.

New York Trade Jottings

Jose de la Macorra, Jr., assistant manager and technical director of the San Rafael Paper Mills Company, Mexico, is a prominent New York visitor this week.

* * *

The Goslin Birmingham Manufacturing Company announce the removal of their New York office to 136 Liberty street, Rooms 607 and 608, Telephones Hitchcock 6925 and 6936.

* * *

J. A. McCann, who has been connected with the New York offices of the Whiting Paper Company for many years, has been appointed sales manager, succeeding Mr. Chapin, who has resigned.

* * *

The New York office and warehouse of the Rochester Paper Company, manufacturers of blotting paper, of Rochester, Mich., is located at 102 King street and not at 345 Varick street, as erroniously reported in this column on September 17.

* * *

The Commercial Machinery Corporation, with offices at 122 East 42 street, New York, has been incorporated to deal in used pulp and paper machinery, under the management of Miss A. A. Fabriani. The telephone number is Caledonia 5-3889.

* * *

Wilbert L. Campbell, pulp and paper mill engineer for the Mine and Smelter Supply Company, of Denver, Colorado, was in New York for several days of the past week. He advised that his company contemplates adding several new lines of pulp and paper mill machinery to their present Marcy Rod Mill.

* * *

W. L. Campbell, pulp and paper mill engineer with the Mine and Smelter Supply Company, manufacturers of the Marcy Open End Rod Mill, Denver, Col., was among the visitors in New York last week. Mr. Campbell left Denver about five weeks ago and has been visiting many of the representative mills in all sections of the country, with the exception of the extreme South, in the interests of the Marcy Rod Mill. Mr. Campbell reports the closing of a number of important contracts. He will visit some of the mills in New England and Canada before returning to Denver.

* * *

There was an overflowing attendance of members and guests at the regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Associatiton of the Paper Industry, held at George's Restaurant, New York, on Tuesday. The guest speaker, J. D. Malcolmson, manager of the Research and Products Development Department of the Robert Gair Company, gave a most interesting and instructive address on "New Uses for Paper In Connection With Latest Developments In Packaging." In the course of his talk, which was thoroughly enjoyed by all present, Mr. Malcolmson demonstrated many exhibits which involve new uses for glassine, kraft and cover papers, with ground wood, soda and sulphite bases.

Rainier Pulp & Paper Co. To Build Warehouse

The contract for the design and construction of a warehouse has been awarded The Austin Company, engineers and builders of Cleveland, by the Rainier Pulp and Paper Company of San Francisco. The structure will be erected at the company's mills in Shelton, Wash. It will be a one-story building, 70 feet wide and 160 feet long.

Paper Chemistry Institute Formally Opened

Dr. John H. Finley Dedicates New Building At Lawrence College Convocation Services—James C. Kimberly, of Neenah, Wis., Donates Gift of $100,000 for Library and Laboratory—Paper Mill Superintendents' Association Gives $1,000

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 23, 1931.—A gift of $100,000, which will make possible the immediate construction of a library and laboratory for the Institute of Paper Chemistry at Lawrence College, was announced today at the dedication ceremonies of the new Institute building by Ernst Mahler, president of the trustees of the Institute. The gift comes from James C. Kimberly, of Neenah, as a memorial to his father, the late J. A. Kimberly, one of the founders of the Kimberly-Clark Corporation.

It was intimated that plans for the new structure will be prepared at once and that construction will be started early during the coming year. The library will be contiguous to the present institute building, and will house the institute's book collection, which is said to be the most valuable of its kind in America.

Formal dedication of the new Institute was made by Dr. John H. Finley, associate editor of the *New York Times*, at the convocation services which opened the school year at Lawrence College. The speaker dedicated the Institute "to the highest and most efficient use of language and to the economical manufacture of the product which carries the knowledge of the ages to all mankind."

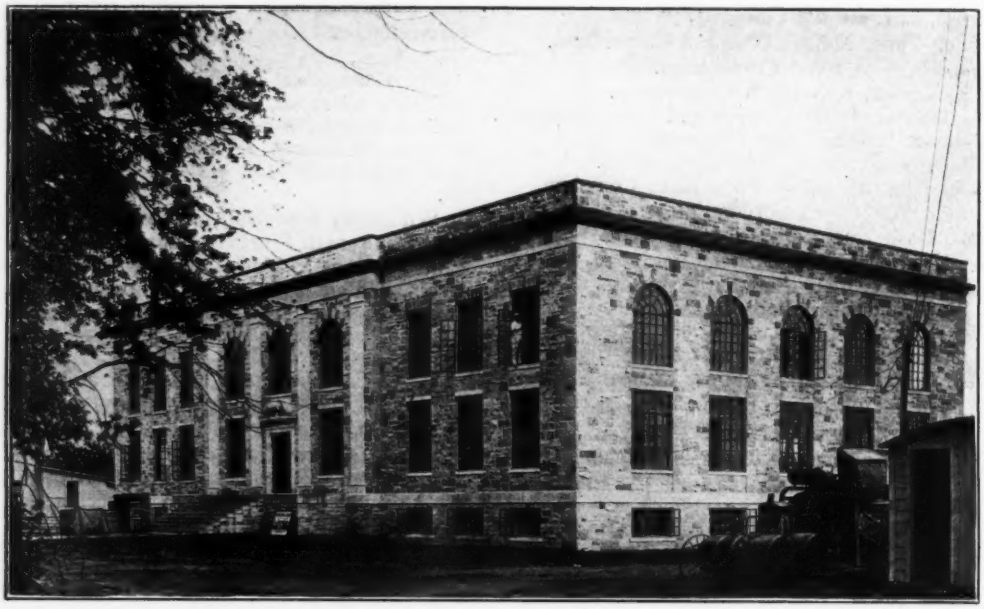
Ernst Mahler Presents Keys

After the invocation by Dr. Irving Mauer, president of Beloit College, Mr. Mahler presented the keys of the Institute to President H. M. Wriston, of Lawrence College, and announced Mr. Kimberly's gift.

Mr. Mahler said that in achieving their purpose of erecting and equipping this building for adequate instruction and research in the practices and problems of the pulp and paper industry the trustees have had the support of individuals and corporations from all parts of the country, and that no less than 253 gifts have been received for construction, equipment and support. Mr. Mahler assured Dr. Wriston that the financing of the building is complete and there is sufficient cash and secure pledges on hand to pay the total cost of construction.

Mr. Mahler also announced gifts aggregating $15,000 for the purpose of meeting fellowship requirements and that these gifts will be expended in the next three years.

Dr. Wriston, in accepting the keys from Mr. Mahler, paid tribute to J. A. Kimberly, pointing out that he was one of the first students at Lawrence College, and that he had served for many years among its trustees. "It is appropriate," he said, "that the latest adventure of Lawrence College should be a memorial to one of its earliest constituents." Dr. Wriston also reviewed the progress of the Institute during the last two years and expressed great confidence in its future growth and service.



INSTITUTE OF PAPER CHEMISTRY

Dr. Finley Traces Strides Made by Science

Dr. Finley traced the tremendous strides made by science during the last fifty years in manufacture and in general knowledge. He listed among its greatest inventions the telephone, the telegraph, television, and teletype. This era, he said, has seen great progress in pure science, in the application of electricity, in the conquest of disease, in the knowledge of the universe, and in the study of the infinite and infinitesimal. During these fifty years, it has been necessary to unlearn many things believed to be true, but in the relinquishing of these we have acquired others more valuable than those we have given up.

"The modern youth has a different background than the youth who entered school fifty years ago. He is the heir

In Six Months . . .

$77,218

worth of confidence in

VICKERY FELT CONDITIONERS

If there is any question in your mind about the dollars-and-cents savings offered by the Vickery Felt Conditioner, we suggest you look again at that figure—and think of the care with which mills are spending their money. To us, it means this: an installation of Vickery Felt Conditioners is one of the most profitable investments a mill can make.

May we send you one on trial, to prove its worth at our expense?

BIRD MACHINE COMPANY
South Walpole — Massachusetts

5115

of these hundreds of millions of years of development, and he will have a vaster influence upon life in general."

Discussing the progress made by science, Dr. Finley said that telescopes now bring into vision stars at such great distance that the light traveling from these bodies at 186,000 miles per second required 300,000 years to reach the earth.

"The earth compares in size with this great universe," Dr. Finley said, "as an atom compares with the size of the earth."

On the other hand Dr. Finley described the progress made in the knowledge of the infinitesimal, declaring that scientists have said that if all the molecules in a glass of water could each be enlarged to the size of a grain of sand they would cover the entire United States to a depth of fifty feet.

The hoarding and the spreading of this vast store of knowledge Dr. Finley said, is due to the printed word, and he discussed the vast amount of paper that is used to carry instruction and news and entertainment to the great reading public. He declared that the paper manufacturers are the custodians of the art of preserving this knowledge and he urged them to make their product a real preservative.

After congratulating Lawrence College for having made possible this Institute designed to make possible the more economical conversion of trees and plants into paper, he dedicated the Institute to the highest and most efficient use of language to the end that knowledge might be most useful.

After the dedication, representatives of technical and manufacturing associations attended a luncheon given by trustees of the Institute. All of the speakers expressed confidence that the Institute would meet the needs of the industry for adequately trained men.

Elimination of economic waste was characterized by Mr. Mahler as the greatest problem in our industry. He declared that nowhere is greater waste to be found than in the training of men for the technical needs of pulp and paper manufacture, pointing out that estimates of loss in this field have ranged as greatly as 80 per cent. "Training these men is not the function of the paper mill, but of educational institutions." He stated that many more technically trained men are needed and that the industry will work under handicap until these are provided. Mr. Mahler emphasized the stability of the Institute and asked his audience to spread word about it and to work for its support.

M. A. Krimmel Discusses Unsolved Problems

M. A. Krimmel, president of the Technical Association of the Pulp and Paper Industry, declared that the most important developments in the history of paper making were the invention of the Fourdrinier machine and the application of chemistry to the various processes of paper manufacture. While there have been improvements and refinements, none has been as important as these basic developments. Despite great progress in the application of chemistry to paper and pulp making, many great unsolved problems remain for the technically trained men, he said. For example, he pointed out, that little had been done toward application of the X-ray and other more modern developments to the study and production of paper. At present the industry is still far from the utmost in economic production. Manufacture of paper is of extreme importance in the dissemination of knowledge, for it is the agent of the printed word.

Mr. Krimmel suggested that it might be wise to add a course in economics to the curriculum of the Institute because, he said, technically trained men with a knowledge of economics will be in a position to apply trained minds to such matters as the present business depression.

The primary object of technical men in the paper and pulp industry is to keep production costs down and at the same time improve quality. He said it has become generally recognized that an institution like the paper Institute is needed to provide the highly trained men necessary to bring about these objects. While men now are being trained in universities and in the Forest Products Laboratory to be of service to manufacturers, these institutions lack the facilities to give the intensive training that is so desirable.

Col. Franklin Expresses Hopes

The suggestion that advancement in technological science might be the means of curing the unemployment situation came from Colonel Benjamin Franklin, president of the American Association of Writing Paper Manufacturers. He said that perhaps the Institute marked the beginning of a new system of education, in that it is putting emphasis upon methods of doing things rather than upon the more abstract phases of education and culture. He declared that the Institute is the "dawn of a new day" in the paper industry and he was hopeful that it will show manufacturers how to make better paper and make it cheaper.

"Every one, whether he is manufacturer or dealer or consumer of paper, will be the beneficiary of this Institute," Colonel Franklin said.

S. L. Willson Praises Organizers

Assurance that he will be a "booster" for the Institute when he returns to his home was given by S. L. Willson, president of the American Paper and Pulp Association. He said that one of the difficulties of the industry has been to find men adequately trained to study their problems and he was hopeful that the new Institute would provide these men. He said a great deal of credit is due to Mr. Mahler and his associates in organizing the Institute and putting it in operation.

Donation from Superintendents Announced

One of the most pleasant episodes at the luncheon was the presentation of a check for $1,000 to Mr. Mahler from the Superintendents' Association. The presentation was made by Fred Boyce, Wausau, president and founder of the association. He said he was greatly impressed with the possibilities of the Institute, particularly because it is under the direction of Dr. Otto Kress, to whom he paid high tribute. Mr. Boyce expressed the idea that technical and practical experience should be combined and the Institute offered the opportunity for this combination.

President Sends Congratulations

Following is an excerpt from a letter received by officers of the Institute from President Hoover:

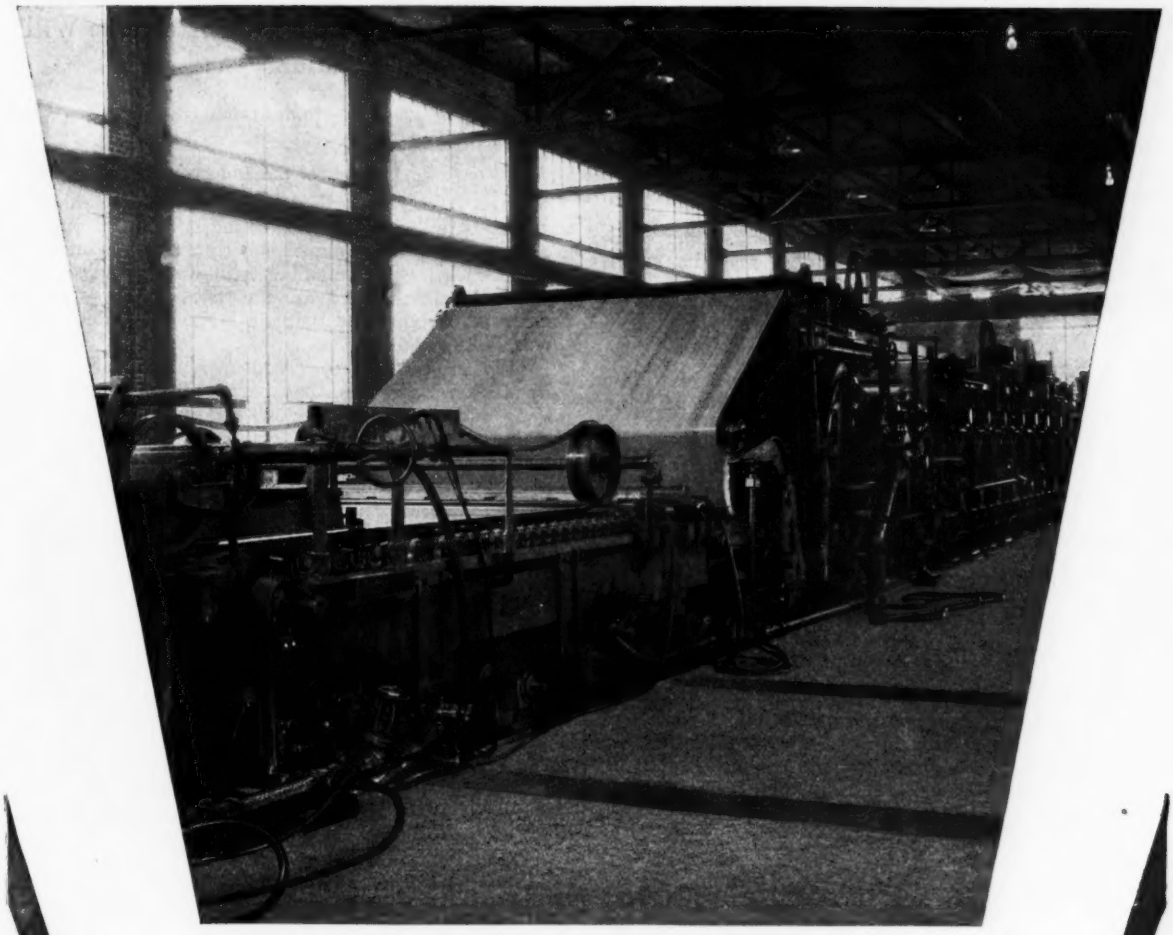
"The organization of the Institute has been widely recognized as a progressive and pioneer step. It helps to ground the industry in sound scientific knowledge and to assure trained technicians to bring the benefits of continuing research to the business. This not only makes for sound development within the industry, but enables it more intelligently and adequately to serve the public demand. I congratulate those responsible for bringing the enterprise to the stage signalized by the dedication of the building to serve as a center of your constructive activities."

H. C. Davis Recovering From Illness

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., September 28, 1931.—H. C. Davis, president of the Davis Paper Company, West Hopkinton, N. H., who has been seriously ill, is very much better and it is understood that he is to leave the hospital this week.

DOWNINGTOWN



SIMPLIFIED REMOVABLE
···FOURDRINIER···

Built under patents that include all the best and latest in fourdrinier design

No obstructions in machine aisle. No portable stands or rails to place in position before removing the wire part. This simplified design of the Downingtown Fourdrinier saves time and labor at the A. E. Adams Paper Co., Baldwinsville, Mass. The rails, on which the machine rolls for changing wires, are permanently located in the floor beneath removable cover plates, which are flush with the floor level. Our Catalog No. 101 completely describes the features of the modern Downingtown Fourdrinier and contains a layout of a complete machine. Write for it now. The Downingtown Manufacturing Co., Downingtown, Pennsylvania.

Maryland Carton Plant Moving to Wisconsin

Marathon Paper Mills Co.'s Baltimore Plant Being Dismantled—Equipment Will Shortly Be Set Up Ready for Operation In Menasha and Wausau—Concentration of Activities Will Result In Economies and Greater Convenience of Operations

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 28, 1931.—Discontinuance of the pail and carton division of the Marathon Paper Mills Company at Baltimore, Md., and its removal to Menasha and Wausau, Wis., was announced last week by John Stevens, Jr., director of manufacturing. The Baltimore plant is already being dismantled and the equipment will be set up and ready for operation in Wisconsin within six weeks. Eight skilled hands will be transferred from Baltimore, and local help to the number of forty men will be added in Menasha and Wausau.

The Baltimore plant was acquired by the Marathon company in 1927 and employed 100 men. The pail and round can departments will be transferred to the Marathon's carton plant at Wausau, and the carton and special departments will be merged with the Menasha carton plant. A large warehouse is being erected at Menasha which will provide additional manufacturing space by the removal of a large amount of stock to this building.

Officials of the company said the change was made in order to concentrate all of the carton operations in Wisconsin. Economies and greater convenience of operation will result.

Three National Forests Dedicated

Dedication of three national forests of more than a quarter million acres in the upper peninsula of Michigan took place last week, with W. A. Munro, president of the Munising Paper Company, Munising, Mich., in charge. Mr. Munro is also president of the Upper Peninsula Development Bureau, which sponsored the establishment of the forests and their dedication. The forests are known as the Ottawa, Hiawatha and Marquette tracts, in the heart of the northern timber territory. Monuments were built at the entrance to each, on which suitable bronze tablets were placed. Records of establishment of the forests were sealed within. Dr. Raphael Zon, director of the Lake States experiment station, and E. W. Tinker, regional forester, also assisted in the ceremonies.

Foreign Pulp Cargoes Arrive

Shipments of foreign pulp direct to Wisconsin points is increasing in amount. A cargo of 8,346 bales of ground wood pulp arrived at Green Bay from Sweden for the Hoberg Paper and Fibre Company. At Milwaukee, the Atlas Storage Company has received 3,000 tons of German, Swedish and Dutch wood pulp for various mills, and has arranged to warehouse 5,000 additional tons now on the way from foreign shippers for later distribution to mills. This company predicts that the amount will increase continually. Foreign ships bring the cargoes directly through the Great Lakes to Wisconsin points, where transfer is made by rail to mills.

Badger Paper Mills Retire Bonds

Retirement of 25 per cent of its $400,000 bond issue at six per cent is announced by the Badger Paper Mills, Inc., Peshtigo, Wis. The company took over the bankrupt Peshtigo Paper Company in 1929 and not only has been able to pay its second dividend but is now prepared to retire $100,000 worth of bonds, according to Edward A. Mayers, president. The company now has a payroll of more than $350,000 a year.

News of the Industry

Repairs have been completed on the Outagamie Paper Company's mill flume at Kaukauna, Wis., and operations are expected to be resumed shortly after a shutdown of several weeks. The retaining wall was raised six inches by adding new concrete and the canal wall was repaired. Danger of flooding or damage is now avoided and the power flow improved.

S. J. Campbell, of the Hudson-Sharp Machine Company, Green Bay, Wis., has been granted a patent on a folding and scalloping machine for paper napkins. The machine permits embossing, scalloping and folding at one operation, reducing considerably time and cost of manufacture by eliminating several operations formerly necessary.

R. F. Bellack, formerly with the Storey-Bellack Company, advertising agency located at Wausau, Wis., has been engaged as advertising manager of the Whiting-Plover Paper Company, Stevens Point, Wis. He has handled the mill account for some time and is familiar with its products and sales field. The company has been advertising extensively to stimulate consumer interest and improve its jobber relations and will engage in more extensive promotion along these lines. Sales have been stimulated considerably on rag content bonds.

With the gain in shoe production in Wisconsin factories, the Manufacturers Box Company, Milwaukee, Wis., is also increasing its output. Its machines are now turning out 125 shoe boxes a minute, with all operations automatic. The company was organized co-operatively in 1919 by a group of shoe manufacturers to produce their entire supply of boxes and has been highly successful.

In the most recent survey of employment, the Wisconsin Industrial Commission has found that the paper industry has helped to stabilize conditions in many Wisconsin cities. Mills have been operating steadily almost everywhere, although some are still on a three to five day basis, but have been able to keep most of the employees earning. Indications are that the seasonal fall increase in demand will mean some gains in employment in paper mills.

Forestry Officials Visit Glens Falls

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., September 19, 1931.—Officials of the United States Forest Service were here this week inspecting the reforestation project in this city located near the city reservoir. It was learned that the purpose of the survey is to find out the adaptability of different kinds of soil for the growing of different species of trees. The project here is regarded as the second largest municipal tree plantation in the state and was started in 1910. Each year large numbers of trees have been added and it is estimated that the tract is now composed of 2,700,000 trees, mostly of pine quality. The trees were obtained from the state nursery in Saratoga and a number of those planted several years ago have already reached a considerable height.

MAKE BETTER BOARD

* Why run part time? Many Board Mills with ample Breaker Beaters are running part time because their board is not good enough quality. Their samples do not bring in orders. They cannot equal other samples which are submitted. What is the trouble?

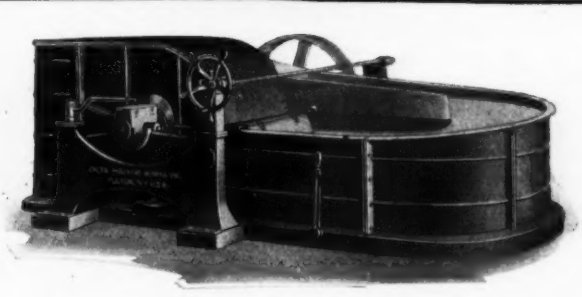
Ten chances to one, it is lack of beating capacity. One or two more Beaters would greatly improve the quality of their board. They could obtain business which they cannot now secure and they could run full time.

If your mill runs only part time, look to your beating capacity. "Your Paper is made in your Beaters." Install Dilts New Type Beaters, make more and better paper, get the business and run full time.

— Dilts —

MACHINE WORKS Inc. FULTON, N.Y.

"Your Paper Is Made In Your Beaters"



MAIL THE COUPON

DILTS MACHINE WORKS, INC.
FULTON, NEW YORK

Gentlemen: Without obligating ourselves, we would like to discuss with your representatives, certain details pertaining to our Beater Room.

Company Name .....

Address .....

By .....

*This series of advertisements is reprinted by request as being the most timely and appropriate in the industry.

Ontario Paper Mills Are Moderately Active

Fine Paper Manufacturers Increase Operations Slightly — Demand for Various Grades of Coarse Paper Irregular—Board Plants Continue to Expand Production — Wholesale Paper Market Is Exhibiting Fairly Strong Undertone

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 28, 1931.—While a fair amount of business is passing in wholesale paper circles in Ontario, the general condition of trade is described as spotty. The mills are somewhat in the same position, a good week or two being followed by a decided slackening in orders. Reports from all sections of the paper industry, however, indicate that a fair average is being maintained both in the distributing and the manufacturing ends and it is plain that there are less reasons for complaint in the industry than there are in other commercial lines in the province. Business as a whole is quiet and if the paper trade can maintain its present rate of progress in face of adverse business conditions generally it will be quite well satisfied.

Wholesalers report quite a fair demand for fine papers with book and litho papers, perhaps, in the lead. The printing trade is fairly busy and has increased its activity of late, as indicated by the fact that they are placing some nice orders for catalog and other fine papers, as the result of the releasing of a fair volume of booklet and similar orders that had been held up during the holiday season. The fact remains, however, that neither the printers or any other paper consuming sources are buying more than the prospective jobs themselves call for, nor is there any end in sight for the general hand-to-mouth buying policy that has been in existence now for months. Basically the wholesale paper trade is in a strong position and is holding its own despite low price tendencies and more or less outside competition in some sections of the trade.

In the manufacturing section of the paper industry there has been some increase of activity, particularly among the fine paper mills, with board mills and coarse paper plants operating slightly above the average of the past few months. Demand for coarse papers varies from week to week but the general level of orders is not what it should be. Board mills continue to increase their operations and although not operating full, are running closer to capacity than a few months ago, despite the fact that conditions in the paper box industry have not improved to the extent expected of it at this tme. The envelope manufacturing branch of the paper industry is none too busy and there is still only a moderate demand for paper converting lines generally. Demand for light weight paper lines has fallen off considerably during the holiday season and toilets and tissues are selling less freely than a few months ago. Lower prices, however, have stimulated business in light weight papers to some extent and are also helping to shut out foreign competition.

Provincial Paper Covers Preferred

While net earnings for Provincial Paper, Ltd., head office Toronto, are not going to reach the figure shown for 1930, it does not appear that the preferred dividend will be earned. In view of the strong financial position of the company there seems every likelihood that the dividend will be continued if 1932 business does not fall behind that of 1931. In 1930 earnings from operations were sufficient to look after depreciation of $250,000, bond and bank interest of $229,559, and to leave a net profit of $516,188, or more than twice the preferred dividend requirements of $245,000. In 1930 common dividends amounting to $125,000 were also paid. Just at the end of the summer season it is difficult to determine the exact position of the company but it is known that business is running from fifteen to twenty per cent behind business of a year ago. The business of the company is not highly seasonal. February and December are usually quiet months, as are also July and August. At this time, therefore, the company has passed through three of its four normally quiet months and faces a good period between now and the end of the financial year. Provincial has been cutting down its expenses to some extent, although no sensational reductions have been possible because there never was a tendency toward flamboyant increases in costs in connection with the company.

Fourth Machine to Start at the "Soo"

George R. Gray, vice-president of the Abitibi Power and Paper Company, announced on September 18 that the fourth machine at the Soo mill of the company would be placed in operation next week and that the board mill would be functioning on full time the first week in October, at which time the local plant would be operating at capacity for the first time in eleven months. Mr. Gray expressed satisfaction that in a very short time practically all of the men who were employed at the mill when the shutdown occurred would be again at work.

Sault Ste Marie Mill Busier

The news print mill of the Abitibi Power and Paper Company in Sault Ste. Marie started operation on September 2 after being idle since November last. Two out of four paper making machines have been placed in operation, while it is stated that a third one will be started the latter part of this month, and the fourth as soon as business warrants. This action by the company provides work for about four hundred men. No intimation whatever as to the plans of the Abitibi Power and Paper Company officials concerning the Fort William unit of the company has been received by R. J. Askin, resident manager, to date.

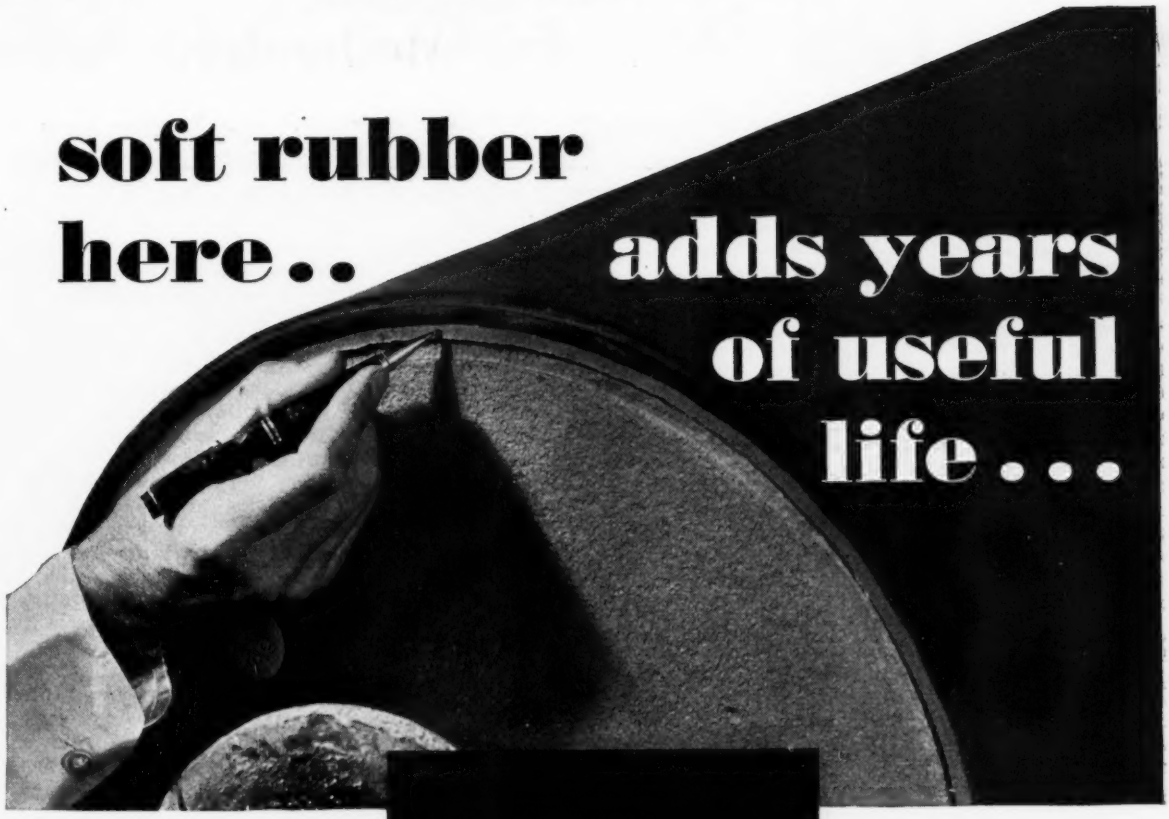
Forest Management

The economic and business problems presented in the management of forests on the basis of production of wood for use in industry are ably presented by Herman H. Chapman, M.F., in "Forest Management," just off the press.

The treatment of forest management set forth in this work is the result of the author's continuous study of American conditions extending over a period of thirty years, of which 22 were spent at the Yale School of Forestry in the effort to teach the subject in a way adapted to the practical problems of management encountered by public and private forest owners.

The work contains 544 pages, 24 figures and 12 tables, and is published by the J. B. Lyon Company, of North Broadway, Albany, N. Y., at $4.50, post paid.

soft rubber here.. adds years of useful life...



Once, soft rubber could not be joined directly to metal. Goodrich changed that. Perfected the Vulcalock process. Made possible a permanent bond between soft rubber and metal. Today's paper mill roll is soft rubber clear to the core. A long-wearing, one hundred per cent "live" cushion.

GLANCE at these two pictures. Do a little figuring. And next time there's a couch roll to be re-covered, you'll know how to add years to its useful life. Get almost fifty per cent longer service. And better service, at that.

The larger picture shows a couch roll sent to us for re-covering. Its outer layer of soft rubber has worn down to a depth of about ⅜ of an inch. A cushion too thin for further use.

Below the soft rubber you will note a layer of hard rubber about ¼-inch thick (indicated by the pencil).

Suppose it had not been necessary to use this layer of "dead" rubber? Suppose the roll had been soft rubber right down to the metal core? Then obviously the roll, even after its four or five years in use, would still have a cushioning surface about ⅜ of an inch thick. It would be good for at least two years longer.

The conclusion is plain. In ordering new rolls, in re-covering old ones, make sure that the cover is soft rubber right down to the metal core, as shown in the smaller photograph. Specify Vulcalock rolls, the new type in which the hard rubber base is entirely eliminated.

One hundred per cent "live" cushion, the Vulcalock roll not only wears longer, it functions more efficiently. Runs true; always retains its cushioning effect; and thus gives a fuller contact against the cylinder mold. It picks up the sheet more efficiently, and takes out more water. Very tough, its soft rubber cover sturdily resists wear.

Literature is available. And perhaps you would like to hear from the user as well as the maker. Mills that have adopted Vulcalock rolls are enthusiastic, and gladly report their experience in detail. If you would like to write some of them, we shall be happy to furnish names and addresses. The B. F. Goodrich Rubber Co., (Est. 1870), Akron, Ohio.

VULCALOCK *Paper Mill* ROLLS

Another B. F. Goodrich *Product*

Couch Rolls · Press Rolls · Table Rolls · Wire-Carrying Rolls · Felt-Carrying Rolls, both Plain and Wormed · Wringer and Squeeze Rolls

Demand for Paper Is Improving In Chicago

Sales Representatives of Paper Manufacturers and Distributors of Paper Report That Buyers Are Now Beginning to Replenish Sadly Depleted Stocks—Fine Paper Market Is Exhibiting Greater Activity Following Price Revisions

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., September 26, 1931.—A sensitive paper market in the Chicago district followed rather closely the internationally important business proceedings of the last ten eventful days and responded somewhat satisfactorily to the improved sentiment that seems to have appeared now that everybody seems willing to face the issue. Some sales representatives and jobbers reported that buyers were now beginning to replenish sadly diminished stocks and that the move was being felt immediately. The fine paper market reported improvement as the price level brought in numerous orders. The market is stable and demand has picked up—in some cases being almost "spirited" in quality. Ground woods were brighter during the week and news print, according to reports, improved its position somewhat as Fall business went ahead. Books and covers, finding that stocks have been decreased to fill a spurt in direct mail advertising, are more in demand, say reports, and current prices are said to be here to stay—at least for awhile. The coarse paper market experienced slight improvment, the market remaining stable and the demand seasonally satisfactory after the heat of the first two weeks in September. The board market continues dull, with here and there a spotty condition appearing that may augur for better times later in the Fall. Waste papers remained about the same.

Paper Board Men to Meet

After a great deal of surveying, balloting and discussion the Paperboard Industries Association has finally decided to hold its annual meeting on November 17, 18 and 19 in New York. The hotel has not yet been announced. Members were asked to choose between New York and Chicago and the close balloting was quite a compliment to the strong geographic position of the organization. According to H. S. Adler, secretary, indications point to an exceptionally fine annual program with some items of the utmost importance to come up sandwiched in between the usual routine business. Mr. Adler bases a part of his forecast on the fine attendance at the September meeting at Niagara Falls. The program at the Canadian meeting drew a surprisingly large attendance with all three divisions—paper board, container and folding box—represented by members from all parts of the country.

Geo. K. Gibson Discusses Gold Standard

The Middle West Division of the Salesmen's Association of the Paper Industry held its second regular Monday meeting of the Fall season on September 21 at the Hamilton Club, with George K. Gibson, of Mosinee, called in at the last moment to discuss a subject of prime interest to not only paper salesmen, but the world as well—the British action in going off of the gold standard. Mr. Gibson, with his usual keen knowledge of economic and business affairs, started off an interesting meeting in which optimists and pessimists—as far as the British movement was concerned—expressing enough views to make the after luncheon program well worthwhile. Harold Knott is still considering ways and means to dole out the President's and Harbison golf trophies and, now that the Fall luncheon meeting has been called off, it looks as though the presentation would be postponed until the annual get-to-gether in February.

News of the Trade

The efforts of the Envelope Manufacturers of America to build up business through concentrated advertising and direct mail material could well be applied and put to use by the paper industry, if comments on the series coming from the envelope group are any criterion. The latest single sheet, which goes out with the advertising of individual member companies, is headed "Would You Auction Off Your Reputation" and gives a straightforward talk on good-will as a firm's "greatest asset". Good envelopes are of sufficient importance as prestige builders, says the folder, that no business can afford to overlook them. And the lay-out, typography, design and illustrations back up the copy in effective fashion.

The Champion Coated Paper Company recently issued, through its Chicago office, a very attractive and helpful booklet entitled "Proper Uses and Layout Ideas". In the pamphlet are valuable suggestions for new and different layout ideas with the proper type suggested for each particular advertisement. The decorative treatment is modern, in harmony with the advanced advertising appeal. The booklet should be of unusual value and service to any user or creator of advertising material.

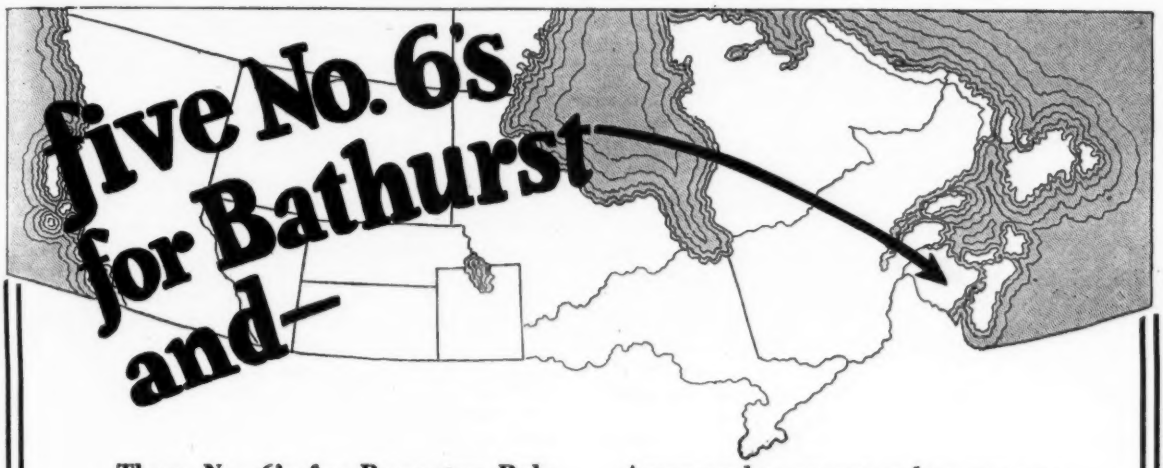
Mr. and Mrs. J. N. Hobbs, 4822 Dorchester Avenue, Chicago, celebrated their golden wedding anniversary this last week with an informal reception at their home. The celebrating couple were married in Indianapolis and have lived in Chicago since 1894. Mr. Hobbs, now 79, has been western representative of the Southworth Paper Company, makers of book and ledgers, typewriter papers, onion skins, etc., for over 47 years. The many friends of the veteran paper man are congratulating him on his success in marriage as well as in his business career. The Southworth Chicago offices are at 323 West Polk street.

Another paper representative has succumbed to the many attractions that the Conway building holds out to paper men. The Chicago offices of the Albemarle Paper Company have been moved from the Bankers Building to the tenth floor of the Conway building, 111 West Washington street, and genial Jack Burrus continues to be in charge. The Chicago paper center is rapidly becoming the home of the majority of the sales representatives stationed in this city.

Hollingsworth & Whitney company, have recently issued a portfolio of letterheads and office forms, designed to show the various ways in which Hollingsworth Basic Bond can be utilized. The paper is characterized as especially good for letterheads, office forms, invoices and purchase orders. Half-tones, line drawings, and any type face reproduce on it accurately and attractively.

Pulp Production in Norway

WASHINGTON, D. C., September 30, 1931.—Wood pulp production in Norway during July was negligible according to reports to the Department of Commerce, except for the 14,994 tons turned out by the ground wood mills and this was 25,850 tons under the amount produced during the same month of last year.



Three No. 6's for Brompton Pulp & Paper Company, Ltd. So much for recent Miami jordan sales in Canada.

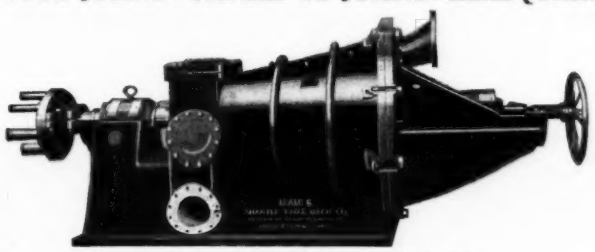
Here in the "States" the sale of No. 6's goes on apace, including a very interesting order from The Howard Paper Company, makers of sulphite bonds.

Among other recent orders was one for two No. 2's from the Longview Fibre Company, Longview, Wash., which boosts their total to ten Miamis.

Shartle Brothers are now, and for several years have been, building more jordans than anybody else in the field.

For hydration only, No. 4—No. 5—No. 6—No. 7.
Hydration and some cutting, No. 1—No. 2—No. 3.

SEND YOUR JORDAN ORDERS TO JORDAN HEADQUARTERS



SHARTLE BROTHERS MACHINE CO.,
Middletown, Ohio

OWNED BY THE BLACK-CLAWSON CO.,
Hamilton, Ohio
Export Office, 15 Park Row, New York, N. Y.

Trade Mark Department

CONDUCTED BY NATIONAL TRADE-MARK CO., WASHINGTON, D. C.

The following are trade mark applications pertinent to the paper field pending in the United States Patent Office, which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade Mark Company, 900 F Street, N. W., Washington, D. C., trademark specialists. As an additional service feature to its readers, PAPER TRADE JOURNAL gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.

KREEMOFF, and representation of the carton. Ser. No. 309,999. Veldown Company, Inc., New York City. For cleansing tissues formed of paper.

PENCO, GOLDSMITH BROS., N. Y. Ser. No. 313,169.—Goldsmith Brothers, New York City. For writing and typewriting paper.

EMPIRE STATE BOND. No. 312,595.—Albert Bernstein, New York City. For writing paper.

ANIMATION BOND. No. 313,562.—Saxon Paper Products, Inc., New York City. For bond paper.

INKSET. No. 314,329.—Frankwood Process Company, Portland, Ore. For safety paper.

UNION TRANS-O-FACE on a red shield. No. 314,521.—Union Bag and Paper Corporation, New York City. For paper bags.

BLANCRAFT. No. 314,625.—Nekoosa-Edwards Paper Company, Port Edwards, Wis. Kraft paper.

SNAPOUT. No. 314,655.—The Overfold Company, Chardron, Ohio. For manifold forms.

UNION TRANS-PAK on a red shield. No. 314,727. Union Bag and Paper Corporation, New York City. For paper bags.

ARTONE. No. 314,816.—Nekoosa-Edwards Paper Company, Port Edwards, Wis. For bleached kraft paper.

SETEX. No. 314,905.—Oscar Fradus, New York City. For toilet seat covers made of paper.

RIVER SHEEN. Ser. No. 314,310.—Westfield River Paper Company, Inc., Russell, Mass. For embossed papers.

PENQUIN POST. Ser. No. 314,384.—United States Envelope Company, Springfield, Mass. For correspondence paper and envelopes.

ENSO, and fanciful representation of a crown.—Ser. No. 302,156. Enso-Gutzeit Osakeyhtio, Kotka, Finland. For paper—namely, wrapping paper, manila paper, document paper, print paper, book paper, cover paper, writing paper, bond paper, fancy box covers, etc. etc.

INDEPENDENT.—Ser. No. 303,777. The Ohio and Michigan Paper Company, Toledo, Ohio. For wrapping paper, toilet paper, bond and book paper, and correspondence and mailing envelopes.

BANKRITE.—Ser. No. 302,231. Benj. D. Benson & Sons, Inc., New York City. For writing paper, bank checks and safety paper.

SAFE TEX-CARTON.—Ser. No. 313,678. Shuttleworth Carton Company Inc., New York City. For paper boxes and cartons.

PORCELLE in a circle.—Ser. No. 313,112 American Lace Paper Company, Milwaukee, Wis. For cast paper pulp cups.

MYRIASTENCIL.—Ser. No. 312,007. Shinjiro Horii, Tokyo, Japan. For stencil sheets.

RADIOPLAUSE.—Ser. No. 314,780. Jos. A. Vogel, Wilmington, Del. For cards and folders sold to the trade and public at large as such.

MYRIAGRAPH.—Ser. No. 312,006. Shinjiro Horii, Tokyo, Japan. For multigraphs, rotary printing machines using stencil sheets, and parts thereof.

Jay Gilbert Dead

[FROM OUR REGULAR CORRESPONDENT]

WATERFORD, N. Y., Sept. 21, 1931.—Jay Gilbert, retired paper manufacturer and prominent resident of this village, died this week following an attack of heart trouble. Mr. Gilbert was 82 years old. He was driving his car when the attack came on and the quick action of his wife in applying the emergency break prevented it from leaving the highway. Although medical aid was hastily summoned it proved of no avail as he was already dead.

He was born in Westfield, Pa., but had resided here for the past fifty years. For many years Mr. Gilbert with his brother, the late Frank Gilbert, operated the Gilbert Paper Company, maintaining mills here and at Cohoes. He retired from active business several years ago when the business was absorbed by the Mohawk Papermakers Company. During his connections with the paper industry he gained a wide circle of friends. He was prominently identified with Masonic organizations in this district and also played a prominent part in civic enterprises. He is survived by a wife, two brothers and a sister.

Hagar Straw Board & Paper Co. Resumes

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, September 21, 1931.—The Hagar Straw Board and Paper Company's plant at Cedarville, near Xenia, has resumed operations at full capacity after being closed two months while electrification of the mills was completed.

The new equipment was installed by the Westinghouse Manufacturing and Electric Company, of Pittsburgh, and electricity is generated by a new steam turbine.

Officials of the company assert that the new equipment permits the manufacture of a fine grade of straw board at a saving of one-third of the fuel.

Steam from the turbine is used again in cooking the straw and in drying the rolls of finished paper.

The Hagar Straw Board and Paper Company is one of the most modern plants of its kind in the country and always has been considered one of the most progressive of the Miami Valley mills, being a leader in its particular line.

To Erect Pulp Storage Building

The contract for the design and construction of a pulp storage building has been awarded The Austin Company, engineers and builders of Cleveland, by the Olympic Forest Products Company of San Francisco. The structure will be one-story, 66 feet wide and 240 feet long, and will be erected at Port Angeles, Wash. The project represents an investment of $25,000. When completed, it will provide additional storage area sufficient to eliminate forced shut-downs in plant operation. The Seattle office of the Austin Company is in charge of the work.

Muncie Mill Works Overtime

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., September 21, 1931.—The strawboard plant operated at Noblesville, Ind., by Ball Brothers, well known glass container manufacturers at Muncie, Ind., is operating on a day and night schedule and is also working Sundays. The plant has a capacity of 90 tons of board each day. Much of this product is being used by the Ball company for cartons, but some of it is being sold. The large fruit crop over the country has caused these plants to operate as fully as possible.

Pennsylvania Paper Mills Moderately Active

While Prevailing Demand for Various Standard Grades Is Restricted, Orders Already Placed Will Maintain Production At Present Scale for Several Weeks—Fine Paper Manufacturers Are Fairly Busy on Medium Priced Book Grades

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., September 28, 1931.—Though keen competition continues among distributors, the mills are not indulging in the revision of values that have marked the distributive trade, with the exception of kraft, that is again generally sold at the prices of last Spring. Summer specialties, normally of greater demand in mid-summer, show unusual activity for this season. The current year has been an unusually fine one for the dealers in these commodities owing to the continued hot spell that marked this summer, with the exception of a few cooler days intermission.

The paper mills are fairly active. Like the distributors, manufacturers have been subjected to curtailment owing to the lagging demand. Orders placed earlier will maintain production for the next few weeks. Future production depends mainly upon the returning cold weather and resumption of buying for Fall supplies. Fine paper manufacturers are busy on book grades, particularly those of moderate prices, while writing paper manufacturers report the finer and higher priced fancy finishes and better classes of bonds the most active of present day requirements. Kraft manufacturer's representatives report that the lower prices may stimulate tonnage to maintain the mills over the current dull period.

There have been slowly drifting markets for building paper dealers, who have had a poor season. Now that Fall is at hand there is slightly better demand, though far from normal. Roofing and other builders' supplies are steady in prices. Sheathings have been brought to $30, and even lower, where large orders are under consideration for the rosin sized grades delivered in Philadelphia. Roofing manufacturers have not yet experienced appreciable orders despite the betterment in the distributive trade. Inquiries, however, indicate returning interest for builders' supplies.

The paper stock market turned slower after a betterment that was most encouraging a few weeks ago, holding until the past week. Prices are steady and few accumulations are on hand as the manufacturers' needs of the last three weeks wiped out most supplies in warehouses and found a sparcity of any grades among the wholesalers of waste paper.

Paper Stock Dealers To Have Indoor-Outing

A novel Fall celebration will be held by the Wholesale Waste Merchants Association of Philadelphia on October 28 when the group of associates who form the entire waste trade organization will join in an "Indoor-Outing," as provided in the meeting held last Wednesday evening at the Lorraine Hotel. The association, at the dinner meeting, took up the matter of organization of a Philadelphia Chapter of the Waste Paper Institute, but owing to the absence of several members, still on vacation, the proposition was postponed until the next session later in the year. The Waste Paper Institute, however, was favorably considered by those present at last week's meeting. It is being actively promoted by the Secretary, William J. McGarity, Sr., of the Penn Paper and Stock Company. An arrangement committee was appointed to provide for the coming "Indoor-Outing" with the following members selected to provide the entertainment: George French, Castle & Overton Company; Dominic Di Santi, Alexander Di Santi & Sons, and William J. McGarity, Sr., Penn Paper and Stock Company. The coming event will be held on the Lorraine Hotel Roof and will be confined to members exclusively.

Paper Trade Bowlers Start Season

Associates of the Philadelphia paper trade who opened the first of the series of games in the Paper Trade Bowling League, begun Thursday evening at the Casino Bowling Alleys, 9th and Chestnut streets, were the teams formed of staff employees of the Garrett-Buchanan Company, with Charles Levero, directing; D. L. Ward Company, Walter Gebhart, director; Whiting Paper Company, Frank Radisch, director; and the Whiting Patterson Company, with two teams, directed by J. Hamilton, first team, and R. Wood, second team. In the opening games the D. L. Ward Company won three from Whiting Paper Company; Whiting Patterson Company No. 1 team won two out of three from Team No. 2; nnd the John R. Howarth Paper Company won two out of three from Garrett-Buchanan Company.

A. Hartung & Co. Adds New Division

A. Hartung & Co., one of the oldest established Philadelphia fine paper houses, 506 Race street, has added a new department to be devoted to the distribution and sale of high grade and exclusively modern lines of announcements and greeting card stocks. The firm, of which A. Richard Hartung and Edward Hartung are brother proprietors, is now equipped with the entire line of these popular priced announcements and greeting stocks to meet the up-to-date requirements of the consuming trades among printers, engravers, stationers and the advertising fraternity. The new department is under management of John H. Lees, formerly in charge of the Lineweave Line, distributed by the D. L. Ward Company. For many years the Hartung Company has been distributors of box makers' papers and fine papers.

W. R. Maull Joins Industrial Tour of U. S.

William R. Maull, vice president of the Dill & Collins Co., has accepted the invitation of the Division of Engineering and Industrial Research of the National Research Council, to join a tour of laboratories by 100 leading business men and bankers, to be conducted under auspices of the Council next month. Members of the party will come from all parts of the country. Thirteen outstanding research organizations located in various cities of the East and Middle West are on the tour program. The tour will start from New York, October 5, and last two weeks. The trip will be made by boat to Boston, where the first laboratories will be inspected, and by special train to other cities.

Russell Ball President of Manufacturers Club

Russell Ball, former vice president of the Manufacturers Club, and a president of the Philadelphia Gear Works, maker of gears for paper mills and other industries, has been elected president of the Manufacturers Club, of this city. He succeeds the recently resigned president of that organization and was made his successor September 18.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

St. Louis, Mo.—The Ajax Corrugated Paper Company, 942 North Second street, manufacturer of corrugated paper and board products, has taken over a building at Second and Mallincroft streets, for a new plant unit, and plans early installation of equipment. New factory is estimated to cost close to $25,000. Henry Gores is president.

Los Angeles, Cal.—The Pioneer Paper Company, 5500 South Alameda street, has concluded negotiations for the purchase of a tract of land adjoining present factory, aggregating about 1 acre, and will use for future expansion. Company proposes to build an addition to plant for large increase in present capacity at a date still to be decided. It is reported that project will be placed under way early next year.

Priest River, Idaho—In connection with proposed new pulp and paper mill at Priest River, Idaho, for which financing recently has been under way, the Pacific States Pulp and Paper Company, Fernwell Building, Spokane, Wash., plans immediate construction of a chemical unit for the production of salt cake for use in pulp production. The new unit will be one-story, equipped for a capacity of about 60 tons per day, and is reported to cost over $75,000, with machinery. Plans have been drawn by Industrial Associates, Inc., 101 Park avenue, New York, architect and engineer. Main project of pulp and paper mill is said to be planned in early future following financing through George B. Caldwell & Co., 25 Broad street, New York. The pulp mill will be equipped for an output of about 100 tons of bleached sulphite pulp per day, and is estimated to cost $300,000 with machinery. It is understood that detailed plans have not been completed. Other units of the project will develop a final cost of more than $1,000,000. C. W. Beardmore is president; and L. E. Van Winkle, secretary.

Danville, Ill.—The local plant of the Cornstalk Products Company, Tilton, near Danville, given over to the manufacture of paper products, using cornstalks as raw material, and lately in financial difficulties, has been acquired by the Nashville Industrial Corporation, Nashville, Tenn., at a bid of $71,000, subject to approval of the Federal Court. It is understood that the purchasing company will dismantle the plant, and dispose of the machinery in small units.

Panama City, Fla.—The Southern Kraft Corporation, Bay Harbor, Panama City, an interest of the International Paper Company, 220 East 42nd street, New York, has work under way on a new one-story building, aggregating about 60,000 square feet of floor space, to be used for storage and distributing service. It is expected to have the structure ready for occupancy at an early date. Work is also in progress on another one-story unit of similar character, to be used for like purposes; it will approximate 30,000 square feet of floor space and will bring the number of plant buildings from five to seven. The expansion program is reported to cost over $90,000. The plant is now running at close to a capacity schedule, and it is said that company has orders on hand to insure continuance on present basis for some months to come. Shipments are being made to Indiana, Kansas, Canada and other distant points. Recent report that company is considering new production units to double the capacity of the mill has been denied by officials, and stated to be without foundation.

Chicago, Ill.—Following recent acquisition of the Seminole Company, 535 West Fourteenth street, Chicago, dealer and distributor of toilet and other tissue stocks, by International Paper Company, 220 East 42nd street, New York, purchasing company has organized a new interest to be shown as the Seminole Paper Corporation, to take over the property and assets. Operations will be closely identified with those of the Continental Paper and Bag Corporation, New York, with mill at Rumford, Me., and R. J. Cullen, president of the Continental organization will act in like capacity for the Seminole Paper Corporation. Mr. Cullen is also president of the southern Kraft Corporation. H. R. Weaver, treasurer, and C. D. Young, secretary of the International Paper Company, will hold like positions with the Seminole subsidiary. Extensive operations are planned for the new distributing unit with increased production of its tissue products.

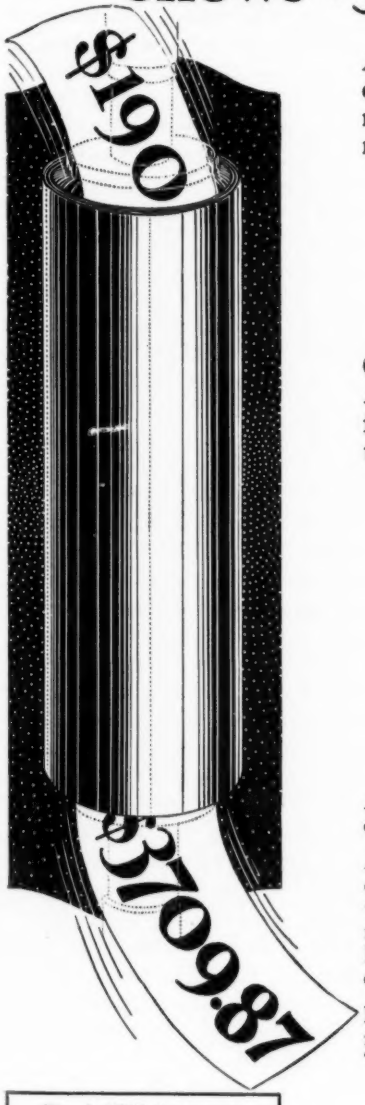
Kingsport, Tenn.—The Tennessee Eastman Corporation, a subsidiary of the Eastman Kodak Company, Kodak Park, Rochester, N. Y., manufacturer of cellulose products, has practically completed its new mill at Kingsport, in course of construction for a number of months past. Machinery installation is being made ready for the operation of the plant in October. It will represent an investment of close to $1,000,000. Company is recruiting a working force for the new mill.

Vincennes, Ind.—The Central Fibre Products Company, Scott street, has plans nearing completion for extensions and improvements in local plant, including remodeling of mill and power house. Work will include installation of additional equipment in power station, and contract for boiler installation has been awarded to Voigt & Son, Louisville, Ky. Improvements will be made in mill equipment and replacements carried out. Entire project is reported to cost over $30,000. James L. Carey, 208 North Laramie avenue, Chicago, Ill., is engineer. W. A. Viets is manager at plant.

Palmyra, Mich.—The Simplex Paper Corporation, Adrian, Mich., is pushing work to completion on a new addition to its branch mill at Palmyra, to be used in connection with the production of strawboard and papers. It is proposed to have the unit ready for occupancy at an early date. It is reported to cost about $25,000.

This Tissue Mill's Investment in a $190 TENSILASTIC Shows $3,709.87 Return...

MORE BANKER PROOF EVIDENCE
No. 3 of a series of actual mill reports
Watch for the rest



A mill (name on request) running 11 to 35 pound tissue adds new emphasis to the records of Tensilastic Rubber Roll superiority and money saving capabilities. Read this report, the original of which may be seen at our office:

> "Tensilastic put in machine March 23, 1930; taken out for grinding November 16, 1930 (practically eight months). *Roll was not corrugated nor did it show any check marks; loss of crown very slight.*
>
> "Second roll put in November 16 and is still in machine (June 20, 1931). *Using other makes they had to grind every six weeks and sometimes sooner.*"

Grinding periods of EIGHT MONTHS against SIX WEEKS indicate FIVE AND ONE-HALF TIMES LONGER LIFE FOR TENSILASTICS. The following analysis is made, conservatively, on a basis of but four times, giving these Banker Proof results:

ORDINARY RUBBER PRESS ROLL

4 replacements in 15 years at $190	$760.00
Interest on $760 at 6% (mean of 7½ years)	342.00
Grinding every six weeks at $20 ($166.50 a year)	2,497.50
Interest on $2,497.50 at 6% (mean of 7½ years)	1,123.87
Total cost, purchase and maintenance, 15 years	$4,723.37

TENSILASTIC RUBBER PRESS ROLL

15 years potential service at $190	$190.00
Interest on $190 at 6% for 15 years	171.00
Grinding every 8 months at $20 ($30 a year)	450.00
Interest on $450 at 6% (mean of 7½ years)	202.50
Total cost, purchase and maintenance, 15 years	$1,013.50

An actual saving of $3,709.87 in Tensilastic's favor,—with latitude on the side of conservatism rather than over-enthusiasm.

Add, also, the avoidance of production delays in changing rolls, the maintenance of paper quality resulting from steady, consistent performance and a degree of service unapproachable by any other type of rubber roll. For Tensilastics,—as press rolls, table rolls, breast rolls, couch rolls, wire stretch and carrier rolls,—are laboratory planned to meet YOUR conditions, laboratory controlled at every stage of processing and proven right by laboratory tests before they reach your machines.

Every day you delay installing Tensilastic Rubber Rolls costs you real money and robs you of a quality of roll service you've never imagined possible. Replace with Tensilastics, check their performance, and learn what it means to be "roll happy".

Write for YOUR free copies of valuable, interesting booklets:
"TENSILASTIC and WHAT IT MEANS"
"The USE and ABUSE of RUBBER ROLLS"
"DENSITY and CROWNING of PRESS ROLLS"

American Wringer Co., Inc.

Rubber Roll Specialists for More Than 40 Years

33 No. La Salle St., Chicago— Woonsocket, Rhode Island —461 Eighth Ave., New York

Pacific Coast Representative: Walter S. Hodges, Lewis Bldg., Portland, Ore.

CANADIAN FACTORY: FARNHAM, QUEBEC

TENSILASTIC
RUBBER ROLLS

T21

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A CONSTRUCTIVE FACTOR

The existing discount on the Canadian dollar, which has been accentuated by the action of the British Government in curtailing gold payments, is looked upon as a constructive factor for the pulp and paper industry in Canada. With prevailing output and prices at a level which provides little net profit to the mills, exporters to the United States will receive an additional 7 to 10 per cent on the values of their sales, representing from $3 to $5 a ton on news print. In 1930 the production of pulp and paper in Canada was valued at $177,000,000, and of this almost 90 per cent was exported to the United States. If the discount remains there is the further prospect that when contracts for 1932 come up for consideration, Canadian mills will have a decided advantage in bidding for new contracts.

It is pointed out that the offset in necessary purchases from the United States by Canadian operators would be negligible. The only big item used by pulp and paper operators which must be obtained from the United States is sulphur. Last year sulphur requirements for the whole industry in Canada amounted to 175,000 tons, valued at around $4,250,000. When compared with exports to the U. S. valued at over $150,000,000, this would be a minor consideration. In normal times large quantities of coal were used to generate steam, but much of this was obtained in Canada. At the present time, however, with most of the mills operating very considerably below capacity, and, consequently, with substantial excess supplies of power taken under long term contract, it is understood that the mills so situated are using electricity to generate the necessary steam. This is more expensive than using coal but as the energy must be taken and paid for, and is not required for operation of the machines, such a policy is good economy under the circumstances.

SUPPORT FOR HEWITT LAW

An interesting address on reforestation by Prof. Nelson C. Brown, of Syracuse University, featured the annual fall convention of the New York State Publishers' Association which was held last week at Lake George, N. Y. During his speech Dean Brown made a plea for the support of the Hewitt Amendment which calls for the expenditure of a large sum over the next fifteen years for the purchase of idle lands. It is his contention that the publishers should be greatly interested in the plan in view of the fact that newspapers consume millions of cords of wood annually in the form of news print. On behalf of the Reforestation Commission he expressed appreciation to the newspapers for the support and publicity given the Hewitt plan which has kept the public well informed.

It is his opinion that a more definite program for reforestation of idle lands should be fixed as the planting of trees on such acreage can not be carried out on a proper scale under the present arrangement. Under present plans he said that it is now possible to plant only about 25,000,000 trees annually and at this rate about 200 years would be necessary to do the complete and thorough job provided for under the Hewitt Amendment. The state has already started a program of reforestation, he said, with the purchase of about 65,000 acres in various counties but it is not the intention to reforest land that could be more profitably used for other purposes. He brought out that before the recent war about 14,000 acres of land were being abandoned yearly but since that time the acreage of non-productive land has increased greatly until now there are about 45,000,000 acres.

Prof. Brown also called attention to the approval already given the Hewitt Amendment by a large number of organizations, including the New York State College of Forestry, New York Grange, New York State Farm Bureau, Adirondack Mountain Club and the Isaac Walton League. The fact that the Legislature has approved it, according to the dean, in addition to it being commended by Governor Roosevelt should indicate the value of the project and he asserted that it should receive the support of the people at the coming election.

Among the advantages to be derived, he declared, would be increased recreational facilities; increased volume of forest products; better game facilities and improvement in appearance of the state's resources. In concluding Prof. Brown stressed the fact that the proposed amendment is aiming at the achievement of a great goal which is to make the state a better and more beautiful place in which to live.

A SCHOOL OF PAPER CHEMISTRY

A unique graduate school has been established at Lawrence College in Appleton, Wis., devoted to research in the chemistry of pulp and paper making. It is appropriate, says the *New York Times,* that such an institute should be associated with a college of the liberal arts and sciences in a region where the making of paper has one of its capitals. The art of printing has been called the "art pre-

servative," but it is dependent upon the paper-making art, which is in the way of becoming a science. One purpose which it has in mind is to give longer life to what is put upon the page. The art of printing has also been called the "art divine," but whatever divinity it has it must share with the paper which is as its body. In ancient times Zeus talked to mortals through the stirring of the leaves of the oaks of Dodona. The god in man now talks with his fellow-man through the bodies of the spruce and other trees and even the fiber of plants, when transmuted by the chemist.

The institute at Appleton has in its possession, as a marriage certificate of the two arts, a single page of the Gutenberg Bible, which, continuing in perfect state, carries its letters without the slightest dimming after nearly 500 years. It will have first place in the new library of paper-making, for which a gift of $100,000 was announced at the dedication of the laboratory building. And if the college should ever grow into the name of "university," it should gather its courses about this science which ministers directly to the liberal arts, as Clark University, for instance, has made geography the center and soul of its graduate courses.

It is stated by a foremost authority that though paper-making has been an art for 1,800 years, news print paper is "still largely made by rule of thumb." The manufacture of iron and steel is under the control of chemists. It is quite as important that the chemist should make research in "the relatively new and less understood raw material which is wood." What the volume of that raw material must be is suggested by the fact that a single Sunday's issue of *The New York Times* if cut into strips of column width and attached end to end would reach fifteen times around the earth. When one adds the almost numberless newspapers and magazines and other periodicals, pamphlets and books, they are indeed enough to cover the earth with knowledge "as the waters cover the sea."

Brownville Co. Revamps Machinery

[FROM OUR REGULAR CORRESPONDENT]

BROWNVILLE, N. Y., September 28, 1931.—The equipment of the Brownville Board Company is undergoing revamping for the purpose of increasing the variety of grades of paper produced. The paper machine is being altered as is also other equipment. The principal product for the past several years has been manila and wood pulp board for which products the demand has been good. The plant is considered among the best of its kind and the changing over of the machinery now under way is expected to increase the efficiency in addition to providing for a more diversified line of products.

A change in the superintendency was effected early in August when the reins were taken over by John Brougham, who has been given full control of production. It is understood that he is somewhat responsible for the plan to embark into a more diversified line of production and the owner, J. M. Gamble, has given him full authority in the making of alterations. The plant is equipped with one paper machine with a 112 inch cylinder machine trimming 102 inches, five one-ton beaters and two jordan engines.

Will of Peter G. Thomson

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, September 21, 1930.—Although no estimate of the value of the estate of the late Peter G. Thomson, for many years president of the Champion Coated Paper Company, was made when his will was filed in the Probate Court of Hamilton county, Ohio, September 12, attorneys who presented it said it disposed of holdings of an estimated value of $750,000.

The entire estate was bequeathed to members of the Thomson family, no bequests outside of the family having been made.

The will named Alexander Thomson, Logan G. Thomson and Walter D. Crandall as executors, with Charles P. Benedict, attorney, and Reuben D. Robinson authorized to act should any executor refuse or become disqualified, or die.

All personal property is assigned to the executors to be sold at private sale by them and from this they may make such donations to various institutions as they may deem proper.

No bequest is made to the widow, Mrs. Kate G. Thomson, with whom a settlement was made prior to marriage on March 24, 1920.

There is no bequest to Peter G. Thomson, Jr., son, because of a previous settlement.

Laurel Court, the magnificent Thomson home at College Hill, near Cincinnati, is to be properly maintained and kept open so long as the executors may deem proper.

All of the real estate is placed in trust in the hands of the executors. The residue of the estate is given in equal shares to Alexander Thomson, Mary Randall, Logan G. Thomson and Reuben Robinson.

All prior gifts are confirmed and are not to be considered as advancements from the state.

Thilmany Makes Improvements

[FROM OUR REGULAR CORRESPONDENT]

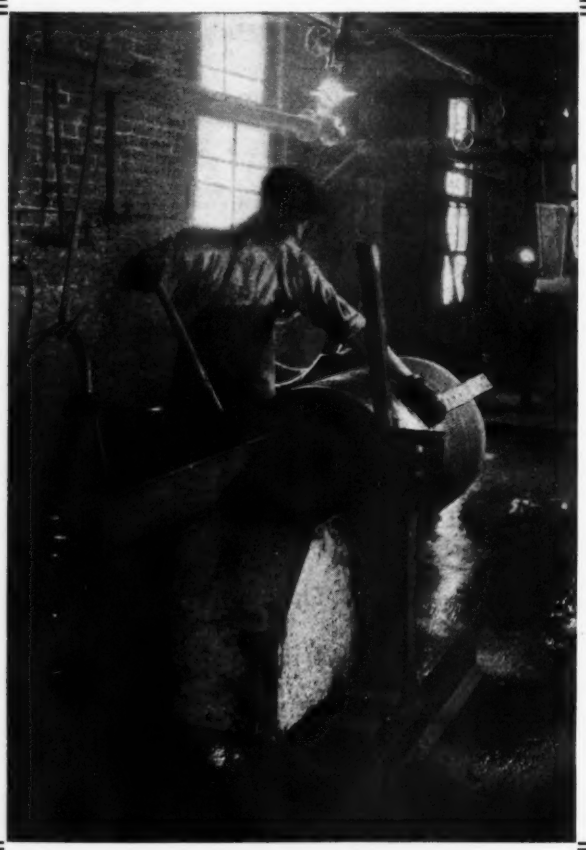
APPLETON, Wis., September 28, 1931.—The Thilmany Pulp and Paper Company announced about a month ago the removal from its paper mill here of two Yankee machines to its pulp mill location in Kaukauna, Wis. It expects to have these two machines in operation by January 1. The company has also purchased a 132-inch Fourdrinier machine, together with all the necessary auxiliary equipment required to consume, along with the two Yankee machines, practically the entire tonnage of pulp manufactured at its pulp mill. This concentration will naturally effect an economy, but there will also be brought about a reduction in production at the company's present paper mill at Appleton, probably to the same extent as the increased production mentioned at its pulp mill.

It is the company's intention also to manufacture as soon as possible on the new machine, Fourdrinier grades of special character incorporating decorative designs in the paper through its marking roll process. The company is also installing a new bleaching plant and it will be soon making on this same machine bleached kraft papers, with or without designs, that will be new in the market.

This considerable expenditure for improvements by the Thilmany Pulp and Paper Company shows its faith in the future of the industry. On this point, M. A. Wertheimer, president of the company, remarks "that if we all keep our heads level there is no reason why the future should not have reasonable returns in store for all those who make the proper effort to secure them."

CONTRIBUTING TO EBG QUALITY

Every possible effort is maintained, in the extensive EBG plant at Niagara Falls, to keep intact the high standards of manufacture and service which have made EBG Liquid Chlorine a favored product for many industries.



Cleaning the diaphragm of the cathodes; a part of the cell-rebuilding which is EBG's continuous maintenance problem.

For instance, each chlorine cell in this plant is torn down and completely rebuilt, on an average of every five months. The picture shows one of the steps in this tireless effort to keep production on a high plane . . . to deserve the EBG reputation.

ELECTRO BLEACHING GAS CO.
Pioneer Manufacturers of Liquid Chlorine
Main Office: 9 E. 41st St., New York, N. Y. Plant: Niagara Falls, N. Y.

EBG

Liquid Chlorine

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Report of Patents Committee

Since the first annual report of the Patents Committee published in the February 19, 1931, issue of the PAPER TRADE JOURNAL, the following bulletins have been prepared and submitted to the secretary for publication:—

Prerequisites for Obtaining Patent Protection—published on page 45, Paper Trade Journal of March 26, 1931.

Patent Searches—published on page 43, Paper Trade Journal of April 9, 1931.

Delay in Filing a Patent Application—published on page 38 of the Paper Trade Journal of May 28, 1931.

Determining the Scope of the Invention—published on page 88 of the Paper Trade Journal of June 11, 1931.

The Patent Application—not yet published.

Sole and Joint Inventors—not yet published.

Employer and Employee—not yet published.

The committee fully expects at this time to complete the series of bulletins covering essential information as to all phases of patent law and procedure by the 1932 annual meeting. Among the subjects to be treated in the near future are included:—patent attorneys, foreign patents, keeping research records, prosecuting an application before the patent office. All suggestions as to these topics and other pertinent subjects will be appreciated by the committee.

The committee has also been in touch with committees of other organizations interested in simplifying patent procedure—particularly the patent section of the American Bar Association, The Manufacturer's Group and the National Association of Manufacturers, in order to determine how our organization may best cooperate with existing agencies in improving the system. The committee regrets that the patent section of the American Bar Association has practically ignored our overtures of cooperation as it is felt that without the fullhearted cooperation of all those interested in patents, little can be done to ameliorate present unsatisfactory conditions.

The Committee begs to report to the Executive Committee that it has carefully studied the proposed bill for a Single Court of Patent Appeals drafted by Edwin J. Prindle, Esq., on behalf of the National Association of Manufacturers and unanimously recommends that our organization put its full force and power behind this most laudable effort to eliminate one of the most glaring defects in our patent system. Copies of the proposed bill together with the arguments in its favor are being sent to each member of the Executive Committee and need not be repeated in this report.

The committee is now engaged in studying a proposal sponsored by the Manufacturer's Group to lay open for inspection all applications pending in the Patent Office three or more years, in order to eliminate, as far as possible, the long pending application evil. As soon as a decision is reached by the Committee, it will be submitted to the Executive Committee for proper action.

In closing, the Committee wishes to thank R. G. Macdonald, the Secretary of TAPPI, and H. J. Berger, the editor of the PAPER TRADE JOURNAL, for their unstinting cooperation in making the bulletins of the Committee available to all the association members. The PAPER TRADE JOURNAL is to be particularly congratulated on its splendid editorial entitled "Invention in the Paper Industry" in the March 26, 1931, issue.

CHARLES W. RIVISE, Chairman.

New TAPPI Members

The following have recently become members of the Technical Association of the Pulp and Paper Industry.

Benjamin T. Larrabee, superintendent of the Pulp Division of the Weyerhaeuser Timber Company, Longview, Wash., was formerly superintendent of the Olympic Forest Products Company, Port Angeles, Wash., and the S. D. Warren Company, Cumberland Mills, Me. He was with the latter for 25 years following his graduation at the University of Maine. Mr. Larrabee was recently president of the American Pulp and Paper Mill Superintendents Association.

Russell Le Roux is sulphite mill foreman at the Interlake Division of the Consolidated Water Power and Paper Company, Appleton, Wis. He was formerly employed by the Nekoosa-Edwards Paper Company at Port Edwards, Wis., and is at present secretary of the Lake States Section of TAPPI.

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Determination of Sizing Ability and Efficiency of Beater Sizing Agents*

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In any process such as the sizing of paper, which embraces so large a number of more or less complex phases and problems, fundamental research becomes rather slow and costly. Consequently the development must originate largely with either the producer or the consumer rather than with private investigators or university students. However, as you are perhaps all sorrowfully aware, the sizing of paper is but one of the paper makers' countless problems. Thus we find the burden of the technical progress in the field devolving principally upon the size producer.

The need for small scale procedure for ascertaining the sizing ability and efficiency of a given material is clearly apparent. Of course the ideal way to obtain this information would be to test the material in question in a paper mill, under the actual conditions of commercial operation. However, in these days of low prices and intense competition no one could be expected to use an entirely untried material with the accompanying dangers of non-productive shutdowns or the manufacture of unsized paper. Furthermore, most of the samples of alleged sizing agents are submitted in such small quantities as to automatically preclude the possibility of making a mill trial.

Insofar as we are aware, no detailed procedure for testing a probable sizing agent on a small scale has been published. It is true that a great deal of laboratory research has been done on the subject of sizing, but when the work has been reported, little mention is made of the exact methods used in preparing and sizing the stock and making and testing the hand sheets. Because of this lack of a proper procedure the problem of developing a reproducible method for determining the sizing ability and efficiency of beater sizing agents was instituted about two years ago in the Research Division of the Technical Department of Paper Makers Chemical Corporation.

A Logical Starting Point

As a logical starting point it was only natural that we should look toward the usual laboratory procedure for testing the strength of pulps, since these methods include the beating of the stock and the formation of hand-sheets. Thus the stock was beaten and sized in a 1½ pound Niagara type laboratory beater with which most paper mill laboratories are equipped. This type of beater is incapable of carrying stock of higher than 3 per cent consistency. Therefore, in order to remain on the safe side, the standard furnish was fixed at 500 g. of bone dry stock per 20 kilos of water. A 3 per cent water emulsion of 70 per cent prepared neutral rosin size paste was selected as the standard sizing agent due to its wide use in most grades of sized paper. The standard stock furnish of 100 per cent bleached sulphite pulp was beaten for 30 minutes with a standard weight of 4070 g. on the bed plate lever arm of the small beater, after which any given percentage (1 to 4 per cent of bone dry size based on the weight of bone dry pulp) of the 3 per cent rosin size emulsion was introduced. After beating for an additional 20 minutes, 120 g./l. alum solution was added in amount sufficient to bring the pH of the beater waters down to 4.5. Ten minutes after the addition of the alum, or after a total beating period 60 minutes, the bed plate was lowered and samples were removed for sheet making.

Roughly, 100 cc. of the beaten stock was used for each sheet, yielding approximately 70 pound paper on a 24 x 36—500 folio basis. The sheets were formed on the familiar suction hand-sheet mould and were couched off by means of a wet press felt over which a photographer's squeegee roll was lightly pushed, lifting the couch felt with the wet sheet off the wire as the roll moved along. The sheet was then pressed between the couch felt and a dry long-napped top felt for one minute at a pressure of 125 lb. per sq. in. Following this pressing, the sheet was removed from the felts and dried on a steam-heated hot plate drier until it was sensibly dry, taking care to turn the sheet over frequently to insure as uniform drying as possible. Six sheets were ordinarily made from each beater run, which were subsequently tested for basis weight, and for sizing by means of the Valley size tester and the ink flotation test. All testing was done at a constant temperature of 70° F. and a constant relative humidity of 65 per cent.

Up to this point we have briefly outlined the methods used in our first unrefined trials. We shall now proceed to describe some of the improvements which have been made, and the manner in which they were accomplished.

The Most Violent Discrepancy

The first and most violent discrepancy which appeared was the lack of uniform sizing results, not only on duplicate runs using the same sizing agent, but also variations in results on separate sheets of one run, and even over portions of a single sheet. Quite naturally attention was directed toward the drying operation for a possible explanation. By the use of a thermocouple it was quickly shown that there existed a considerable variation in temperature over the surface of the steam heated drier plates. Among the more obvious difficulties attending this method of drying are the following: (1) That there is little or no opportunity for the circulation of air, except when the plates are opened to permit the sheet to be turned over. (2) That some of the steam leaving the sheet condenses on the cooler portions of the dryer plates, rewetting the sheet unevenly. In all probability this fact is responsible for the marked cockling effect which is so frequently encountered with this type of dryer. (3) It need hardly be mentioned that uniform pressure on the sheet is practically unattainable by this method of drying. (4) That occasionally a sheet sticks to the plate and upon removal leaves part of itself behind in the form of a fine fuzz. Since any of these factors might cause the previously noted variations in size test results, various driers were tried in an attempt to obtain greater uniformity.

The first type which was subjected to test was the stationary electric drum dryer. This apparatus consists of a curved copper drying surface upon which the sheets are laid and over which is stretched a thin canvas "drier felt." The surface curve approximates that of the circumference of an average paper machine dryer roll. The concave side of the copper drying surface forms the top of an enclosed compartment in which the electric heating elements are placed. The temperature is controlled by means of a simple thermostat. This drier has the advantage of being capable of drying as many as six 6x6 inch sheets simultaneously, but it also has several serious disadvantages. (1) As measured by means of a thermocouple the surface temperature is subject to extreme variations caused by too drastic a heating and cooling cycle, as well as by non-uniform heating over the drying surface. The resultant of these two temperature

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variations was as much as 15° C. in some ranges. (2) Like the steam plate drier the stationary electric drum dryer permits no direct exposure of the sheets to the air though it has the advantage of allowing the steam to escape uniformly through the canvas cover. (3) The temperature range control on this type of drier is rather crude which makes it difficult to change drying temperatures and then duplicate former conditions. Other criticisms include extreme cockling at times and two-sidedness.

Continuing in our efforts to establish satisfactory drying conditions the rotating steam-heated drum drier with a carrier felt was next used. This apparatus also failed to eliminate bad cockling and in addition yielded a sheet having hard-dried high spots and soft-dried low spots and consequently failed to overcome non-uniformity in sizing results. The sticking of sheets to the roll proved to be a stubborn disadvantage with this dryer. However, it has the advantage of fairly accurate temperature control and freedom from two-sidedness.

A Modified System Used

Abandoning all forms of commercial driers a system was tried which is a modification of one developed by D. W. McCready at the University of Michigan. In this modified method, the 6 x 6 inch pressed sheet was folded over a 5 x 5 inch copper plate, the folded edges being held in place on the reverse side of the plate by means of gummed-paper tape. The plate was then placed in an electric constant temperature oven where it was allowed to remain until the sheet was dried. The dry sheet was removed from the plate by passing a knife around the plate under the folded edges. In practice six sheets were dried simultaneously to insure uniform drying for a full set of sheets. The plates were stacked in the oven in a hexagonal stack to obtain uniform air circulation about each sheet. Uniformity of results, of course, was more important than maximum sizing, but an oven temperature of 115° C. and a drying period of twenty-five minutes were established as the optimum conditions for good sizing. This method has the advantages of good air circulation, complete freedom from cockling, accurate temperature control, excellent finish, but most important of all high uniformity of results and a closer approximation to mill conditions, as the sheet dries under tension. Its limitations are that it is somewhat cumbersome and that it permits no alternation of surface exposure. The sheets dried in this manner also show two-sidedness simulating a Yankee-machine dried paper. Notwithstanding any limitations it may have, sheets dried by this system showed approximately 100 per cent more uniform sizing results than were obtained by any of the previous methods. In addition, the absence of cockling made the determination of basis weight much more accurate. A later subordinate refinement of this method was the use of highly polished chromium-plated plates to improve the finish, and escape the sheet discoloration due to the corrosion of the copper.

It may be well to mention that as yet no work has been done in our laboratories using the vacuum dryer, due to the lack of necessary equipment. However, it is hoped that, some time in the future we may be able to compare that type of drying with the present method.

Further Approach to Mill Conditions

Throughout the development of this procedure the attempt was made, insofar as was practicable, to approach average mill conditions. Since in these tests, the stock was being beaten and sized at 2.5 per cent consistency while the mill beater consistency is ordinarily twice that high or even higher, an effort was made to increase the consistency in the small 1½ pound beater. It was found that the laboratory beater was incapable, unaided, of circulating stock of higher than 3 per cent consistency. In order to run at higher consistencies a large motor driven paddle wheel was installed on the narrow side of the beater just opposite the roll. This contrivance takes the stock away from behind the backfall and builds up a head of stock in front of the roll, enabling the beater to circulate stock at consistencies as high as 4.5 per cent. Since it was felt that this was a fair approach to mill consistencies, no additional work was done toward further increasing this value. Incidentally, though, a large amount of work done with all factors constant except beater consistency, which was varied from 4.5 per cent down to 1 per cent, indicated increased sizing with decreased consistency. During the work on uniformity of results in connection with drying it was apparent that variations in basis weight were causing part of the difficulty. The portions of stock from which each sheet was made were heretofore measured out by taking a given volume of the stock at beater consistency. By the improved procedure about 1000 cc. of the beaten and sized stock is removed from the beater, weighed, and diluted to 1 per cent consistency. 200 cc. of this 1 per cent stock is then used for each sheet, producing an approximately 54 pound sheet on the basis of a 24 x 36—500 ream. This change decreased the maximum basis weight variation from 54 pound ± 5 to 54 ± 1, again tending toward more uniform sizing tests. Thus far very little work has been done on the couching operation, other than to standardize on the use of a 15 pound couch roll which is rolled over the couch felt without the application of any external pressure, thus keeping that factor constant. The couch felts are kept in uniform condition by wetting them thoroughly and running them through a hand wringer, once from each edge, just before use.

Pressing

During the work on pressing it was found that by varying the sheet consistency between certain limits the efficiency of the size in the sheet fluctuated remarkably. Therefore, it is of the utmost importance to maintain all sheets at a uniform consistency as they reach the driers. Hence the use of couch felts of constant wetness for each sheet, for when the same felt is used over and over again, each sheet becomes wetter than the preceeding one. The pressing procedure which was standardized upon was as follows: The couch felt carrying the wet sheet is placed in the press, sheet up, and covered with a dry top felt. The pressure is raised to 50 lb. per sq. in. and immediately released. The sheet is then removed from the felts, placed between two sheets of blotting paper and pressed again, this time for one minute at 50 lb. per sq. in. By this procedure the sheet consistency can be kept almost constant, thus insuring greater uniformity of sizing tests.

Sizing Tests

In making all tests on the finished sheets we have recognized the necessity of maintaining constant temperature and humidity conditions, consequently all testing is done at a temperature of 70° F. and a relative humidity of 65 per cent. Furthermore all samples are allowed to condition for a period of 12 hours or longer before any tests are made on them. It is a well known fact that the testing of sizing is a very controversial matter, nearly everyone having his own opinion as to what tests are significant. In our investigations we have therefore run as many of the more standard tests as the dimensions of the sheets permitted, hoping in this manner to strike an average result which would be significant. Thus, in addition to basis weight, each sheet in a six-sheet set is tested for sizing by the Valley size test, the ink flotation test, the water penetration test (as indicated by the sugar-dye mixture) and the $FeCl_3$-NH_4CNS test. The Carson curl test was unavoidably omitted, since hand sheets have no machine- and cross-direction. In summarizing sizing results all tests are taken into consideration, making the necessary assumption that each of these tests gives some indication of degree of sizing.

Testing a New Sizing Agent

Up to this point only the technique of a single beater run has been discussed. We shall now describe an arbitrary method of

running a complete test on a new sizing agent. A standard furnish of bleached sulphite pulp is sized with 1, 2, and 3 per cent of rosin size emulsion which serves as the gauge size. Then these runs are duplicated, sizing with equivalent amounts, on the dry basis, of the material under test. In each of these cases the amount of alum used is so varied as to obtain a beater pH of 4.5, 5.6, and 6.2, sheets being made under each of these conditions. Should these tests show the material worthy of further experimentation, the above runs are duplicated using the following pulps: unbleached sulphite, soda, cooked old papers, ground wood, kraft, and rag. If the material efficiently sizes the majority of the pulps mentioned it is logical to attempt to size a series of representative furnishes for typical standard papers such as:

1. A sulphite and soda, light-filled, bond.
2. A heavy-filled, book paper, made from bleached- and unbleached-sulphite, and old papers.
3. A kraft and unbleached-sulphite wrapper.
4. A ground-wood and unbleached-sulphite sheet.
5. A bleached-sulphite and rag bond.
6. Board.

Little Work as Yet on Board

Though as yet we have done but little work on the sizing of board, it is hoped that we may soon add to the above list sizing tests on such typical boards as:

1. News filler with unbleached-sulphite liner.
2. Kraft test-liner.
3. Patent-coated board.
4. Insulating board.

It is apparent that no provision has been made in the procedures as outlined for factors such as water variations, hot beaters, reuse of whitewater, etc., which occur in everyday mill practice, but these conditions must be duplicated only when testing a given sizing agent for one particular mill and consequently, important as they may be, they do not have a place in a general procedure.

It must be recognized that these tests in no case can definitely justify or condemn a new sizing agent, but that they do serve as the basis for mill trials which should be the final criterion.

In conclusion may we state that we make no claims whatever for the procedure and that it is merely submitted as the present status of our efforts toward developing a method which is suitable for our purposes. However, we hope that it may prove helpful to some and that it may call forth valuable criticisms and suggestions for its improvement which incidentally will be heartily welcomed.

Sulphate of Alumina and the Alums*

By J. J. Healy, Jr.[1]

Sulphate of alumina or papermaker's alum ranks third among the heavy chemicals of the country from the standpoint of tonnage. The alums—soda alum, potash alum and ammonia alum—are of considerably less importance but must be considered in any discussions of sulphate of alumina as they are really substitutes for it. In 1930 there were used in the United States 300,000 tons of commercial sulphate of alumina, 17,000 tons of iron free and 20,000 tons of the alums, the total of 340,000 being exceeded only by the 5,000,000 tons of equivalent 50° Be. sulphuric and the 2,000,000 tons of alkalis.

The papermaker is, perhaps, the largest consumer of this material. While the only distribution figures available indicate that 60 per cent of our alum is used for water treatment, 35 per cent for papermaking, and 5 per cent for miscellaneous uses, a large part of this water treatment figure can be accounted for by water treated in paper mills.

It might be of interest to mention some of the uses for alum classed under miscellaneous. The use of alum for all of these as well as for water treatment and paper sizing depends on either or both of its chemical properties, that is, its water solution has an acid reaction and it contains an element capable of forming insoluble organic salts or being precipitated in an insoluble form by reaction with an alkali. For instance aluminum sulphate is sometimes used as a mordant in dyeing, and as a tanning agent for white leather. In both cases insoluble alumina is combined either chemically or mechanically with the material treated and results in better fixing of the dye in the first case and more or less resistance to water and putrefaction in the second. In the manufacture of soap aluminum sulphate is used to throw out soap, as an insoluble aluminum compound, from the glycerine lyes. These uses account for most of the tonnage classified as miscellaneous and are evidently closely allied fundamentally to the sizing process.

Historically the alums are quite old. In 750 A.D. the Arabian chemist, Geber, was supposed to have used "alum." This was probably a soda or potash or similar alum and not sulphate of alumina and the use to which it was put is not mentioned. Presumably it was medicinal or metallurgical since chemistry at that time was concerned chiefly with attempts to discover compounds which would aid in prolonging human life, or would transmute the base metals into gold.

Alum for paper making, and again it is soda or some similar alum, is not mentioned until 1827, when a Frenchman, Obry, made known a method of sizing paper by using an alkaline solution of rosin and alum. Sulphate of alumina did not come into prominence until 1890 or thereabouts, but since that time its popularity has so increased that today no papermaker would think of using any other acid source of alumina.

The reason for the popularity of sulphate of alumina is an economic one which is readily appreciated if we examine its constitution. The papermaker is of course desirous of having as high a content of alumina and surphuric acid, in other words aluminum sulphate, in his alum as possible because these are the active components in sizing. The ordinary sulphate of alumina, commercial or iron free, will contain approximately 17 per cent Al_2O_3 or 56 per cent aluminum sulphate and 44 per cent water of crystallization. This differentiates it somewhat from sulphate of alumina as found in chemical handbooks which contain 15.0 per cent alumina or 50 per cent aluminum sulphate and 50 per cent water; and considerably from the alums, soda, ammonia, etc. These last, in general, contain only about 11 per cent alumina which is equivalent to 37 per cent aluminum sulphate. The balance is made up of sodium or ammonium, etc., sulphate, which is inert material and of no sizing value, and crystal water, the amounts being 14 and 49 per cent of the total respectively. The alums, ammonia alums in particular, have always had some advantage as regards low iron content over sulphate of alumina but today iron free alum is just as good and perhaps better from this standpoint. Sulphate of alumina then, is the only alum worth considering for the practical papermaker.

Sources

Chemically, of course, alum is a salt and can be made by neutral-

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Contribution of the Non-Fibrous Raw Materials Committee.
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izing the alkali, aluminum hydroxide with sulphuric acid. Fundamentally, this is the method used on a commercial scale and the principal source of aluminum hydroxide is the mineral bauxite which is also the raw material for the manufacture of aluminum. Bauxite deposits are found all over the world but the best and most extensive ones are located in Arkansas, U.S.A., France and the Guianas. Bauxite is a brownish material containing more or less hydrated aluminum oxide. In order for it to be economical for the manufacturer of alum to use, however, the latter should be as high as possible and a suitable grade will contain 60 per cent Al_2O_3 equivalent to 92 per cent aluminum hydroxide. In addition impurities are present; chiefly, iron, titanium, and silica, 2-3 per cent each.

There are, of course, other sources of aluminum. The best known of these are perhaps the aluminum-bearing clays, which are aluminum silicates, and cryolite, a sodium, aluminum fluoride. Neither of these has proved practicable for producing alum chiefly because their low alumina content, 35 per cent in the first case and 20 per cent in the second, makes essential the sale at a profit of the by-products resulting.

Method of Manufacture

Bauxite is used as such in the manufacture of commercial alum. The first step in the process is to grind the lumpy material which is received, to a fine powder, about 40 mesh in size. This powder is then treated with the proper amount of sulphuric acid and water to convert it to a soluble basic aluminum sulphate. This term "basic" has often been the cause of a lot of confusion. It does not mean that the solution is alkaline but signifies that there is more alumina present in solution than is necessary to combine with the acid in the proportions represented by the formula, $Al_2(SO_4)_3$. There has always been a feeling among papermakers that this excess alumina was wasted as it was not available for sizing. The results of some recent experiments of ours indicate that this is not so, and that an alum containing as high as 2.0 per cent basic alumina gives as good sizing as the same amount, on a total alumina basis, of the ordinary grade which contains 0.5 - 0.6 per cent. Even if this were not so, it would be to the papermaker's advantage to use a basic alum. In the first place a neutral alum cannot be made without great difficulty.

The precision of the method used for determining the acidity or basicity of an alum is such that a neutral alum might be anywhere from 0.3 per cent free acid to 0.1 per cent basic. Any free acidity in the alum is detrimental. In the first place an acid alum will readily rot burlap bags. Basic alum will not unless it is wet. Then an acid alum solution cannot be evaporated to as high an aluminum sulphate content as can a basic one. In the third place, acid alums are soft and pulpy and cannot be readily ground, whereas basic alums are crystalline and grind easily. This last point is of particular importance in making slab alum which is shipped in bulk and must be strong enough to resist considerable handling. In order to get maximum strength, slab alum is made low in total alumina with the ordinary basicity.

The titanium and silica are insoluble and the next step is to clarify the solution by settling or filtering. The iron, however, has gone into solution with the aluminum and must now be removed or made harmless. There is no practicable method for removing iron from an aluminum sulphate solution. There is, however, a method for making it more or less harmless for papermaking purposes, that is reduction to the ferrous state. The reason for this seems to be as follows:

Iron will react with an alkaline rosin solution just as will aluminum. If the iron is in the higher state of valence, i.e. the ferric state, the compound formed is insoluble and inasmuch as iron salts are colored, will give a tinge varying from pink to brown to a white sheet, depending of course on the amount of iron present. However, if the iron is reduced to the lower or ferrous state, the compound formed is soluble and is not retained appreciably by the sheet. It has been found that if more than .02 per cent ferric iron is present in commercial alum, sheets made from unbleached Swedish sulphite have a pink tinge. No other pulp will discolor in this manner, but this is generally accepted as the upper limit for ferric iron in bauxite alum.

Reduction of the iron can be effected by adding a solution of a reducing salt such as sodium or barium sulphide. After the iron is reduced and the solution made basic, we have a solution containing about 35 per cent aluminum sulphate. This solution is then boiled down in an open pot until it contains about 56 per cent sulphate and the hot solution run into pans where it freezes. It is then broken up and ground to give the various sizes. A good grade of commercial or "B" alum made in this manner will contain

Total Al_2O_3	17.20%
Combined Al_2O_3	16.55
Basic Al_2O_3	0.65
Ferrous Fe_2O_3	0.44
Ferric Fe_2O_3	0.004
Insoluble	0.09

Iron Free Alum

In the manufacture of iron free alum, bauxite is the raw material as before, but it must go through a purification process before it is suitable for use. This is the so-called Bayer process which results in an aluminum hydroxide, free from iron and other impurities. The process depends upon the fact that aluminum hydroxide is soluble in strong alkalies as well as acids and iron is not. The bauxite is digested with a caustic soda solution by heating under pressure. The alumina dissolves and the iron and titanium remain behind as an insoluble residue. Some silica is also dissolved. The solution is filtered, seeded by the addition of a small amount of aluminum hydrate and then the alumina precipitated as the hydroxide by agitation. The silica is kept in solution by stopping precipitation at a definite ration of Al_2O_3 to Na_2O in the solution. The product is dried and the result is a white powder consisting of practically pure aluminum hydroxide, and commonly called hydrate of alumina. This is the raw material for iron free or "H" alum manufacture. The process is essentially the same as for bauxite alum but of course no filtering or settling is necessary and there is no iron to be reduced. On the latter account, basicity is brought about by dissolving the proper amount of hydrate in the neutral or acid alum solution before boiling down. Concentration, crystallization, etc. are carried out in the same way as for bauxite alum and the result is the white product you know as iron free alum.

Future of Alum

What is the future of alum in paper making? Is there anything which is likely to replace it in the immediate future and are there any new raw materials which will cheapen it or new processes of manufacture which will result in a more concentrated product? Undoubtedly if we were certain of just what takes place physically and chemically, when paper is sized with rosin and alum, we would be better able to give a definite answer. However, in the light of our present knowledge, I think we may say that there is immediately available no product which has the cheapness of alum and at the same time possesses the two properties which seem to be essential in a chemical to be used for fixing rosin; namely an acid reaction in solution and the presence of an element which forms an insoluble compound with the rosin, or is itself deposited in an insoluble form on the fiber. We know many chemicals which will do one of these things. For instance, sulphuric acid will neutralize the alkali in a rosin milk but it will not fix the size. Magnesium sulphate will perhaps precipitate an insoluble resinate or a mixture of insoluble hydroxide and rosin, but it has little neutralizing power. Calcium chloride is ineffective from both points of view. Aluminum chloride might have possibilities but it is comparatively expensive. Alum still remains supreme.

There is one material which would seem to be of value as an assistant to alum, sodium aluminate. Sodium aluminate is the

alkaline carrier of alumina, more or less corresponding to the acid carrier, alum. It is made by dissolving bauxite or hydrate in caustic or fusing bauxite with soda ash. The latter process results in a yellowish white powder containing 54 per cent Al_2O_3 and 36 per cent of Na_2O corresponding to 85 per cent sodium aluminate. On a total alumina basis, therefore, one pound is equivalent to three pounds of alum. It is already being used to advantage in treatment of water. Certain waters require a large dosage of alum for proper treatment and the result is a corrosive water of low pH, which it is necessary to neutralize with soda ash, in a separate operation. By using a mixture of alum and sodium aluminate, in the proper proportions, the same result is accomplished in one step and the resulting water is lower in sulphates and carbonates. In addition an actual saving in cost of materials often results.

How about cheaper alum? In the first place there is no cheaper raw material than bauxite in sight. Clay and cryolite have been mentioned and a large amount of work has been done, but neither is economical.

It is, of course, possible to evaporate more or all of the water from an aluminum sulphate solution and get a more concentrated or even a 100 per cent aluminum sulphate. At present, however, the cost of such evaporation is more than the cost of transportation of the water involved so that there is no saving for the consumer. The problem to be solved is primarily one of materials of construction which will be cheap and withstand the high temperatures or the low pressures for such evaporations. There also seems to be some difficulty in readily dissolving the concentrated alums.

Sulphate of alumina, then, would seem to be the chemical to be used by the papermaker for sizing purposes for some time to come. Cooperation of the papermaker and the alum manufacturer in determining the physics and chemistry of the sizing process will undoubtedly lead to improvements in its composition.

Steam Requirements Of The Deinking Process *

By E. G. Milham[1]

Fundamentally, the process of deinking waste paper is a very simple one, similar in many ways to the operation of laundering. The process may be divided into the unit operations of grading, shredding, dusting, cooking, defibering, screening, washing, bleaching and re-washing. In order to have a proper background for the discussion of the steam requirements of the deinking process, it might be well to review briefly all the above operations although none of them other than the cooking and defibering normally require the use of steam.

Deinking Procedure

GRADING:—In preparing old papers for deinking, it is essential that most of the ground wood papers, parchment papers, grease-proof papers and lacquered papers be removed at the outset. It is also necessary to remove other uncookable materials as they may be discovered from time to time; because it often happens that otherwise good book papers carry uncookable inks which render them unfit for use. The operation of grading is one which requires intelligent care and experience and is usually performed by carefully trained women.

SHREDDING:—The degree of shredding required is governed largely by the type of cooking and defibering equipment to be used. The general practice is to do just as little shredding as the cooking and defibering equipment will permit. As a matter of fact, in many high density cooking systems, it is not necessary to shred at all.

DUSTING:—Most old papers carry considerable sand, lint, surface dirt, etc., which are best removed before the cooking operation begins. It is not necessary to have elaborate equipment for this operation. All that is necessary is a tumbling drum covered with quarter inch mesh wire or a vibrating perforated conveyor belt between the shredder and the cooker.

COOKING:—There are almost as many cooking systems as there are deinking plants. However, they may generally be grouped into two general classes namely;—those which cook at low density and low pressure and those which cook at high density and high pressure. These will be discussed a little more in detail later. The primary function of the cooking process, of course, is the loosening of the binding materials in the old papers and in the inks. The chemicals most commonly used for this purpose is soda ash although some mills have successfully used caustic soda, silicate of soda and soap for the purpose.

DEFIBERING:—The defibering of cooked stock is accomplished by means of violent agitation either during the cooking operation or subsequent to it. The operation was formerly carried out in modified Holland Beaters, but during recent years centrifugal circulating pumps have almost entirely supplanted the beaters. The pumps use considerably less power than the beaters and produce a brighter, stronger stock, especially if the stock is heated to 140 deg. F. or more prior to or during the defibering operation.

SCREENING:—The defibered stock is usually passed over riffers and a set of screens before washing although in some of the older installations, the stock is not screened until after the washing operation. In the very best installations, the stock is screened both before and after washing. In most cases, flat screens with 12 to 16 cut plates are used. It is essential that enough screening capacity be provided to take care of peak loads without crowding.

WASHING:—The washing consists of removing ink, dirt and other foreign matter from the defibered stock. The most popular washer today is the decker type, consisting of three to five deckers in series; with a dilution tank between each decker. The stock runs through the apparatus continuously, the washing water running counter-current to the stock. It is not customary to use steam or hot water in connection with the washing.

BLEACHING:—The bleach requirement of paper pulp is very low, usually less than one-half pound of chlorine per hundred pounds of stock. The operation is usually carried out cold in continuous or intermittent open tank low density bleachers.

REWASHING:—It is, of course, essential after bleaching to wash out the products of the bleaching reaction and all traces of lime. This is usually accomplished by means of a two to four cylinder decker washer of the same type as used in removing ink from the stock. Ordinarily, the water from the bleach rewasher is used directly in the deinking washer.

In approaching the study of steam requirements it is well to divide the cooking phase of the deinking process into two general classes, namely: The low density, low pressure cook and the high density, high pressure cook. In the first case, the prepared waste paper is cooked at from five to seven per cent density at atmospheric pressure. In the second case, the paper is cooked at about forty per cent density at thirty to fifty pounds pressure. Of course, these two types of cooking have totally different steam requirements.

* Presented at the fall meeting of the Technical Association of the Pulp and Paper Industry, Kalamazoo, Mich., Sept. 24-26, 1931.
Contribution of the TAPPI Heat and Power Committee.

[1] Chemist, Watervliet Paper Co., Watervliet, Mich.

1. The Low Density Process

In the study of this process, it will be assumed that the paper will be cooked at 6 per cent density at 212 deg. F. for four hours and that the defibering of the papers will be carried on simultaneously with the cooking operations. A theoretical consideration of the subject will give us the following figures:—

Bone dry waste paper per cook	Pounds	10,000
Bone dry soda ash per cook	Pounds	400
Other chemicals		None
Pounds water per cook		156,700
Average starting temperature of waste paper	deg. F.	70
Average starting temperature of cooking water	deg. F.	60
Average finishing temperature of paper and water	deg. F.	212
Specific heat of stock		.5
Specific heat of water and soda ash		1.0
Heat required to bring stock from 70 to 212 deg. F.	B.t.u.	710,000
Heat required to bring water and soda ash from 60 to 212 deg. F.	B.t.u.	23,879,200
Total primary heat required	B.t.u.	24,589,200
Heat lost through evaporation, etc., during cooking process		16,411,000
		(By measurement)
Total heat required including losses	B.t.u.	41,000,200
Available heat per pound of steam (10-pound pressure)	B.t.u.	1,150.0
		(136-212 deg. F.)
Total theoretical pounds of 10-pound steam required	Pounds	35.652
Approximate value of steam per 10,000 pounds papers		$12.48
		(35c/1,000 pounds)
Total theoretical weight of 10-pound steam required per pound of waste paper	Pounds	3.5652

The outstanding feature of the above figures is the immense amount of water that must be heated per unit weight of waste paper (approximately 15.7 pounds per pound of stock). Another feature is the very excessive loss through evaporation, radiation, etc., amounting to approximately 40 per cent of the total heat required.

If deinked pulp is to be economically produced by the open cook process, it is essential that a low cost source of heat be available, since the above steam cost of $2.49 per ton is excessive. Of course, the best source of low cost heat available to the average paper mill is waste gases from the boiler plant. This heat is readily obtained through the use of economizers in preheating the cooking water. In the figures given above for a 10,000 pound batch, if the economizers can be used to heat the cooking water from 60 to 185 deg. F. the direct steam requirement per batch is dropped from 35,652 to 16,205 pounds or from $2.49 per ton to $1.13 per ton.

The second excessive item above is the large amount of heat lost through evaporation, radiation, etc. The problem of saving this heat is not an easy one to solve. It is essential that open cookers be well vented. It is also essential that steam be kept on until *all* paper in the cooker has been cooked. In case the defibering is done during the cooking operation, it is necessary that the stock in the cooker be completely turned over every few minutes, which, of course, necessarily exposes a large proportion of the stock to the atmosphere with consequent loss of heat. The supply of waste heat from the cookers is normally not steady enough to warrant its use in the preheating of cooking water although it is conceivable that a scheme could be worked out to make the use of this heat for preheating practicable. At the present time, so far as I know, this heat is being lost by every deinking plant operating on the open cook process.

2. The High Density Process

In the case of the high density process, the properly prepared old papers are put into a rotary boiler with soda ash and water, the ordinary proportions being about three pounds of soda ash and one hundred fifty pounds of water per hundred pounds of old papers. The boiler is sealed and rotated at about one revolution per minute for about six or seven hours at forty to fifty pounds steam pressure. The pressure is then released after which the boiler is opened and the cooked stock dumped out into a hopper for conveyance to the defibering and washing apparatus.

In the study of this process, it will be assumed that the paper will be put into the cooker at 40 per cent density (1½ pounds of water per pound of old papers), and that the paper will be cooked for seven nours at forty-five pounds steam pressure. The defibering will be carried out independently of the cooking operation and at 5 per cent density. The stock will be heated to 140 deg. F. during the defibering operation in order to maintain proper color and substantially reduce the amount of time and power required.

A theoretical consideration of the subject will give us the following figures:—

Bone dry waste per cook	Pounds	10,000
Soda ash per cook	Pounds	300
Other chemicals		None
Pounds of water per cook		15,000
Average starting temperature of waste paper	deg. F.	70
Average starting temperature of water	deg. F.	60
Specific heat of stock		.5
Specific heat of water and soda ash		1.0
Final temperature of stock and water in cooker	deg. F.	292.2
Heat required to bring stock from 70 to 292.2 deg. F.	B.t.u.	1,111,000
Heat required to bring water from 60 to 292.2 deg. F.	B.t.u.	3,333,000
Total primary heat	B.t.u.	4,444,000
Heat lost through radiation and blow off	B.t.u.	989,000
Total	B.t.u.	5,433,000
Total pounds of steam required for cooking		5,326
Steam required for heating de-fibering water to 140 deg. F. Pounds		8,374
Total steam required per 10,000 pounds stock	Pounds	13,700
Total steam required per pound of waste paper	Pounds	1.370
Approximate value of 45 pounds cooking steam at 50c		$2.66
Approximate value of 10 pounds heating steam at 35c		2.93
Approximate value of steam per 10,000 pounds papers		$5.59
Approximate value of steam per 2,000 pounds papers		$1.12

The outstanding feature of the figures for the high density process is the extremely low amount of steam lost, amounting to about 18 per cent of the total cooking steam required and only 7 per cent of the total cooking and defibering steam required. It is interesting to note that the steam required for cooking and defibering in the high density process is almost identical with the steam required for cooking and defibering in the low density process *provided* the cooking water for the latter is pre-heated to 185 deg. F. with waste heat.

Conclusions

From a comparative study of the two processes discussed above, the following general conclusions may be drawn:—

1. It is impossible to cook papers with the low density process at temperatures much under 210 deg. F.
2. If a reasonably low steam cost is to be obtained, it is essential that water for the low density process be preheated with waste heat.
3. Radiation and evaporation losses in the low density process amount to about 40 per cent of the total heat required.
4. The steam required per pound of paper in the low density process is 3.56 pounds.
5. The steam required per pound of paper in the high density process is 1.37 pounds.
6. The steam required per pound of paper in the low density process (provided water is preheated to 186 deg. F. with waste heat) is 1.62 pounds.
7. The steam required per pound of paper in the high density process provided defibering water is preheated to 140 deg. F. with waste heat is .53 pounds.
8. The high density process is more easily controlled than the low density process.
9. The high density process cooks hard inks more readily than the low density process.
10. Generally speaking, the low density process produces a more easily washed and bleached stock than does the high density process.
11. Everything considered (steam, power, labor, investment, chemicals, flexibility and quality) the low density process when properly installed and operated shows a decided balance in its favor as compared with the high density process.
12. There is considerable room for improvement and development in both processes.

Hydration Measurement by the Boiling Method*

T. R. Le Compte [1]

Early in 1930, the writer had already devoted about a year's work to the search for a definition and method of measurement of hydration. The experience had finally led progressively from a study of the effect of cold alum solution on wetness (slowness), and then, in turn, to that of boiling alum, boiling dilute acid, boiling dilute alkali and finally, to that of boiling water.

It was thus found that the exposure of beaten stuff to the effect of boiling water has a positive and accurately duplicable depressing effect on the wetness. Standardization and extenuation studies had been in progress for some time when abstracts of M. Nakano's work began to appear in *Chemical Abstracts*. It was apparent at once that our bases of research were identical, and that the developments should be complementary. Hence translations of a number of important publications by Nakano were eventually obtained, and a more detailed study of his and subject to duplication at will. Nearly all of Nakano's studies work showed that, on essential points, our findings were identical, were made with chemical wood pulp, Manila hemp stock having been used by the writer.

This review of both studies is brought to the attention of the Association in order to make the information available for all interested persons.

Papermakers hydration is recognized in the mill, so far as the beaten stuff is concerned, by a soft, slippery, slimy feel, a greater power to retain water i.e., a greater resistance to drainage of water, a greater degree of sliding on the cylinder mould, and by greater tendency to crush at the presses. So far as the paper is concerned, hydration is thought to produce greater shrinkage during drying, and to yield a more transparent, harder, denser and more tinny sheet.

In view of the fact that the term "hydration" is used so generally to characterize the condition of a beaten stuff, it is important to arrive at a satisfactory definition of the term, and to find a method of measuring it quantitatively. The word appears to be used, at times, synonymously with the term wetness, which is measured by the well known freeness or slowness testers. It is believed that these types of testers have proved to be the most practical and convenient method of obtaining a quantitative measure of the degree of beating. It is generally accepted that slowness and freeness tests are responsive to the quality of hydration as well as to the degree of fibrillation and cutting, and that the result of a test evaluates the several quantities. It is understood that a beaten stuff of short mean fiber length (S.F.) and low hydration (L.H.) may give the same slowness or freeness test as a well beaten stuff of long mean fiber length (L.F.) and high hydration, (H.H.) i.e.:

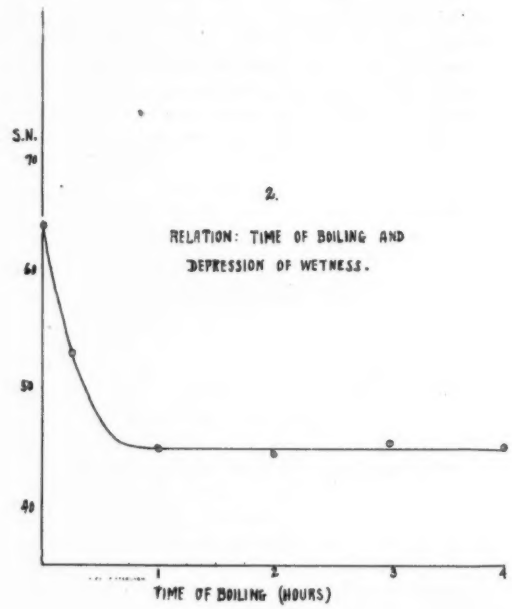
$$\frac{\text{(S.F.) (L.H)}}{\text{S. N.}} \simeq \text{(L.F) (H.H.)}$$

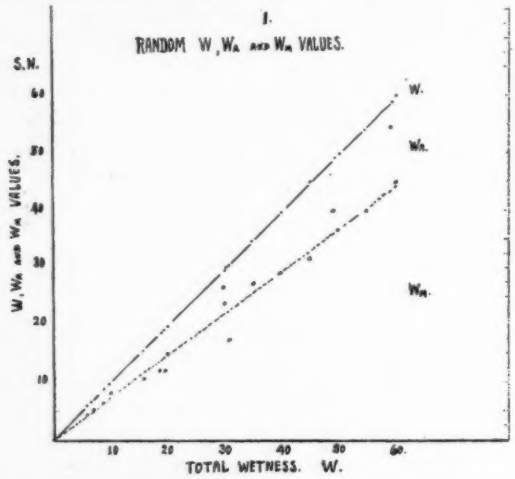
This complex relationship might conceivably serve as a basis for the measurement of hydration, provided it were found feasible to destroy the hydration by a treatment which does not affect the wetness due to the mean fiber length and to the degree of beating. In such a case the difference between the slowness number (S.N.) before and after the treatment would presumably be a quantitative measure of hydration.

A method of this type has been developed. In this report it is termed the "boiling method." It was discovered practically coincidentally in March, 1924, by Michimaro Nakano[3], in Japan and Guild and Mills[3] in Great Britain. The writer as the result of a sequence of laboratory experiments, was led to the same method early in 1930.

The method consists of measuring the wetness i.e. slowness or freeness, of the beaten stuff before and after subjecting test samples to a 1 hour boiling, followed by cooling.

Nakano gives the following designations to the several values obtained.





Contribution of the Stuff Preparation Committee.

* A Review of the work of Michimaro Nakano and of independent complementary studies made by the Manila Hemp Paper Fellowship of the Mellon Institute of Industrial Research. Published by permission of the John A. Manning Paper Company, Troy, N. Y., Donor of the Manila Hemp Paper Fellowship. Presented at the fall meeting of the Technical Association of the Pulp and Paper Industry, September 24-26, 1931, at Kalamazoo, Mich.

[1] Member TAPPI; Industrial Fellow, Mellon Institute.

[2] Michimaro Nakano, Paper Ind. 19, No. 10, 4-10 (1924); Paper Ind. 19, No. 11, 4-8 (1924); J. Chem. Ind. (Japan) 28, 244 (1925); Cellulose Ind. (Tokyo) 4, 178-82, 300-4 (1928); Cellulose Ind. (Tokyo) 5, 264-9, 317-26 (1929); Cellulose Ind. (Tokyo) 6, 31-5, 75-6, 89-99, 106-7 (1930).

[3] Guild and Mills, World's Paper Trade Review 81, 894 (1924).

W = total wetness (or slowness number)
W_m = wetness after boiling
W_s = wetness lost by boiling
$W = W_m + W_s$

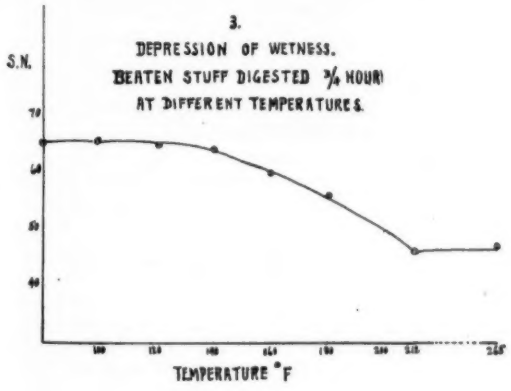
Using this method, the experimental value of W_s in general shows a tendency toward a proportionality with W_m, i.e. for stuff of high W_m, the value of W_s is usually also high (Fig. 1). The determination of W_m and W_s are as accurately duplicable in repeated tests as is the original slowness value. It is apparent therefore that some fundamental property of the beaten stuff is being measured. It is believed that W_s corresponds to hydration, for the reasons that, as compared with the original stuff:—

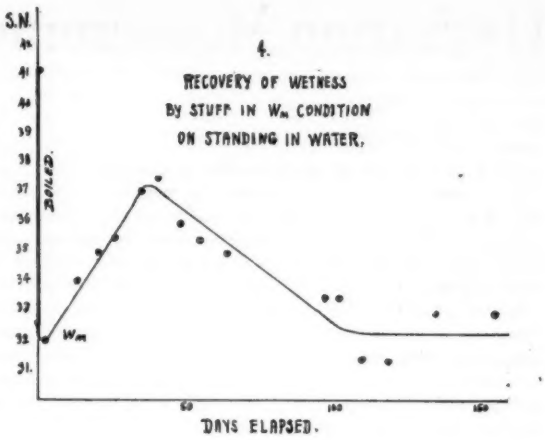
1. The boiled stuff:—
   (1) Feels less slimy.
   (2) Possesses a lesser power to retain water.
   (3) Drains water with greater ease.
2. Paper made from boiled stuff:—
   (4) Exhibits less shrinkage upon drying.
   (5) Has a lower tensile strength.
   (6) Is softer, and has less rattle.

In the standardization of the method, it was found that:

1. The value of W_s is dependent upon the consistency, the maximum value occurring when the sample is tested at 0.3 per cent consistency. The concentration of the test sample during the process of boiling does not affect the result.
2. The depression of the slowness, i.e. W_s, attains a constant and maximum value within a one hour period of boiling. (Fig. 2). The results shown in Fig. 2 were obtained on a series of separate samples of the same beaten stuff boiled for different periods of time.
3. The effect of elevated temperature on the depression of slowness becomes measurable above 140°, increasing to a maximum at 212°. Treatment of a test sample in an autoclave at 265° gave the same depression of slowness as at 212°F. (Fig. 3).
4. The same depression of slowness is obtained whether the test sample is boiled in water, 1 per cent hydrochloric acid, 1 per cent sodium hydroxide, or 0.5 per cent alum solution.
5. The W_m value of the boiled stuff remains within the experimental error of measurement for several days. However, a partial recovery of the lost wetness takes place slowly and at a uniform rate during the ensuing 30-40 days (Fig. 4) attaining a maximum recovery of 50 to 75 per cent after which there is a recession until the total wetness of the stuff (W) has reverted to the W_m value, i.e. the W_s value reverts to O. This process requires several months for completion.

Nakano found that the presence of N/5 strength of acid and alkali prevents any recovery of wetness during seven days, during which time his control experiment had shown a significant recovery. He found also that the presence of a trace of mercuric chloride prevents recovery of W_s on standing.



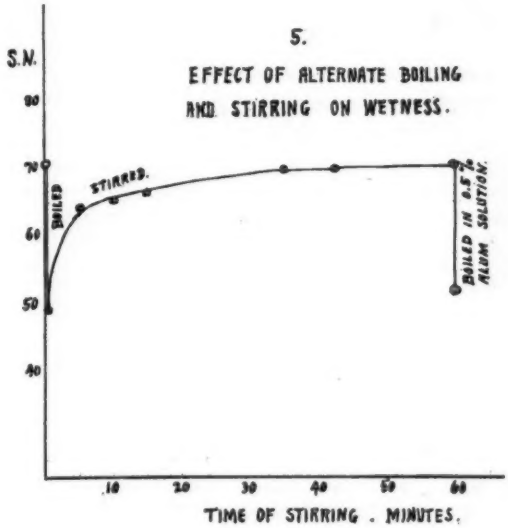


6. A vigorous agitation of stuff in the W_m condition by means of a motor stirrer results in a complete recovery of the lost wetness within 35 minutes (Fig. 5).

It has been found that stirring has no effect on the W_m value. It must therefore follow that the W_s wetness is the one affected. It is very easy therefore to dehydrate and then rehydrate a beaten stuff by a repeated sequence of boiling and stirring. When a stuff is subjected to vigorous agitation while at the boiling temperature, there is no loss of wetness. Hence the agitation overcomes the dehydrating effect of the boiling process. Nakano has observed that the effect of agitation is enhanced when the stuff is at a high consistency. It has been found that when a stuff has been boiled in 2 per cent sodium hydroxide, it is impossible to restore even a fraction of the lost wetness either by long standing in water or by vigorous agitation.

On the Nature of Hydration

Nakano's conception of the nature of wetness due to beating is interpreted to be as follows:—



$$W = W_m + W_s.$$

W_m becomes greater as the beating proceeds because the mean diameter of the fibers is decreasing and the fibers therefore are more flexible, so that the mean interval between each fiber (i.e. pore space) becomes smaller, offering more resistance to the flow of water. Hence the determining factor of W_m is the mean dimension of the fibers, and for fibers of the same dimensions, a mean modulus of elasticity.

The water involved in W_s is water of imbibition. The absorption of this water of imbibition is accompanied by swelling and softening. The fiber becomes more flexible. This action takes place at all stages of beating but in the early stages, the fiber bundles are so rigid that the increased flexibility due to water of imbibition is incapable of being measured on the slowness tester. However, as the ultimate fibers become beaten out or separated this increased flexibility becomes measurable, causing the stuff to compact together more tightly, decreasing pore space, and thus giving an increased value for total wetness. Therefore, as W_m increases, W_s also increases. Hence W_s is determined by the quantity of the water of imbibition and by the dimension of the fiber.

For the study of the degree of beating, W_m is the important value to consider. Since freezing removes the water involved in W_s this water cannot be considered to be chemically combined, but that of imbibition. Since neither time of standing nor stirring affect W_m this value is dependent only upon the mean dimension of the fibers. Stirring affects W_s only. Since both ~~W_m increases, W_s also increases. Hence W_s is determined by~~ bility of a chemically combined hydrate with the water is excluded.

Some evidence supporting Nakano's conception of hydration may be mentioned:—

It appears probable that hydration may be due to some phenomenon taking place within the internal regions of the fiber, for example:

1. A time element of 30-60 minutes is required for the maximum depression of slowness as a result of boiling.

2. A long protracted period of several months is involved in the revival and subsequent loss hydration when stuff in the W_m condition is allowed to stand in contact with water.

3. James Strachan found that a vacuum and, as well, increased pressures increased the imbibition of water by regenerated vulcanized fibers.

4. Guild and Mills found that the drying of wet pulp destroys some of the wetness as measured by the slowness tester. They considered this destroyed wetness as hydration, and being determined by the Boiling Method, their hydration was identical with Nakano's W_s.

The conception of absorption or imbibition of water in the intermicellary spaces seems to be compatible with the facts and the theory.

5. It has been observed that hydration induced by xanthate beating is of a transitory nature, the wetness reverting subsequently to a point below that given by plain water beating. Nakano beat xanthate treated stuff. He obtained a slimy impractical stuff, which, upon neutralization of the xanthate, reverted to a relatively free condition as compared with the control experiment.

Upon beating stuff in the presence of 15 per cent sodium hydroxide, he obtained an exceptionally free stuff. Beating of stuff pretreated with saturated zinc chloride solution resulted in a very free stuff.

These effects of gelatinizing agents upon the results of the beating seem to be explainable by the flexibility or flaccidity of fiber theory of hydration on the basis that the subsequent contact with water causes the swollen and gelatinized micelles to be converted into regenerated cellulose which deposits between the micelles rendering the fibers more rigid or less flexible or flaccid, and hence resulting in a lessened W_m and W_s.

It is hoped that this brief statement of the writer's observations, with those independent investigators, will prompt further consideration of the suggested boiling method for hydration measurement by use of the slowness tester. Further use of the method on paper making stocks from other sources with various degrees of beating should more fully inform us whether this suggested method for hydration measurement is of value.

Research In The Use Requirements Of Papers*

By P. K. Baird[1]

The objectives of the committee on use requirements of the Technical Association of the Pulp and Paper Industry are: (1) To delineate the general sheet properties of papers, (2) to determine these properties in order of importance for each kind of paper and paper board, (3) to select (or to request development of, by the proper committee, where not now available) a standard test method for each property, and (4) to set maximum and minimum values for each property for each specified paper, after having established approximate commercial values.

The committee's accomplishments up to the present consist of a preliminary delineation of general sheet properties and the assignment of members, who will select or develop the proper test method to evaluate a specific property and set specifications on all papers for that property.

Basic Sheet Properties

Although it is apparently possible, in theory, to specify a sheet of paper completely by describing only three factors,—namely, the *material*, the *volumetric composition*, and the *structure*,—these *basic properties* are as yet too complex to be easily assayed and the more definite general and specific properties described herein will therefore be considered in this study. The properties describe the behavior of the sheet toward mechanical stresses, toward liquids, toward the passage of gases, and toward miscellaneous chemical and physical influences, and likewise describe the physical form and appearance of the sheet.

General Sheet Properties

The general sheet properties so far delineated are: Thickness, density, ream weight, appearance, strength, elasticity, absorbency penetration, physical composition, structure, chemical composition, and permanence.

All of the more specific properties of papers and of paperboards, which can be classified under these general divisions, will now be discussed in outline.

Specific Properties

In commenting on the general properties, in the order in which they have been given, the specific properties will also be classified and some of the more obvious necessary improvements in their determination will be noted.

Contribution of the TAPPI Use Requirements Committee.

* Presented at the fall meeting of the Technical Association of the Pulp and Paper Industry, Kalamazoo, Mich., Sept. 24-26, 1931

[1] Member TAPPI; Senior chemist, Forest Products Laboratory, Madison, Wis.

Measuring the THICKNESS would not be thought to present any great difficulties. But, what is the proper pressure or pressures to use in calipering a sheet? The true thickness, of course, should be taken as the thickness in use. This property is also of considerable importance in the analysis of a sheet for mathematical relations of strength properties, porosities, and so forth to volumetric composition, such as solid fraction.

Again, DENSITY should be specified as *actual* or *apparent;* the second kind, which is a familiar and valuable quantity to the fiber-board user, is a compound of thickness and density (pounds per mil) for an understood ream.

Another compound of density and weight is *footage,* which is of special value to users of insulating board. *Bulk* is a property compounded of thickness and finish (controlled by structure). REAM WEIGHT is perhaps the most familiar of all sheet properties. Special cases of this property are *base or basis weight, standard ream,* and *substance.* Another compound quantity of much significance to printers is *sheetage,* which is determined, like footage, by weight and thickness.

APPEARANCE includes *color, gloss, opacity,* and *cleanliness.* There are now available two excellent color-recording instruments that should eliminate all previous empirical attempts at color evaluation and make possible the expression of color in fundamental units. Gloss is determined with the Ingersoll glarimeter. The methods and apparatus for the determination of opacity are also well developed.

STRENGTH PROPERTIES, as now recognized, constitute a group of five : namely, *tensile, tearing, bending, folding,* and *bursting* strengths. Tensile and bending strengths are the only ones that can be considered pure properties. Until further research on test methods is possible, it will be necessary to use the methods and apparatus already developed to specify these properties. Eventually, it should be possible to factor each into simple component stresses by the methods of analysis of applied mechanics.

ELASTICITY of the fibers themselves and of the sheet as established by fiber properties and sheet structure enters into the bending, tension, and compression properties involved in all strength determinations.

ABSORBENCY in general can be separated into specific properties, covering the behavior toward water, oils, writing inks, printing inks, blood and fats, or any other liquid met in commercial use.

PENETRATION is the rate at which such agents as water, turpentine, writing inks, printing inks, and water and other vapors can pass through paper, as contrasted to absorbency, the amount taken up by the paper. Intimately connected with both absorbency and penetration is the *porosity* of the sheet, a structural variable.

STRUCTURE is perhaps at once the most interesting, the most important and the most difficult to express of all sheet properties. Involving as it does the arrangement of the various units in the sheet, it is a further advance in expressing the physical composition. Considerable work needs to be done on this property, particularly in view of the anisotropic character of papers. The arrangement of the fibers, which is structure, no doubt affects most of the other sheet properties. The *surface smoothness* or *finish* of a sheet is determined by structure. Structure and fiber stiffness (elasticity) control largely the *expansion* or *contraction* of a sheet under mechanical pressure but probably do not control it under changing hygroscopic conditions, as in drying. The volumetric composition and structure determine the porosity, absorbency, and penetration properties of papers and boards. *Cockle* and *curl* are largely manifestations of structure.

The CHEMICAL COMPOSITION of the material of which a sheet is composed comprises the many chemical components of the fibrous and non-fibrous constituents of the solid fraction, and of the liquid and perhaps gaseous fraction. Among these are alpha, beta, and gamma celluloses, lignins, pentosans, fillers, sizings, and coatings. In addition to these properties it may be necessary to include the source of the materials, particularly the fibers, until more is learned of their true natures.

Lastly, PERMANENCE is a property of much importance. An accelerated method has been developed to characterize materials for this quality, but considerable work still remains; the data obtained must be certified by actual aging tests. Permanence is used in this instance to mean the retention of properties, especially strength, when the sheet is used or aged in ordinary atmosphere in a relatively static condition. (The term durability is not included or used specifically, since it would vary with each use and must be related to a dynamic condition applied to the sheet.)

Research Plans

The activities of the committee on use requirements will consist of a use-analysis survey, the development and selection of a standard test method for each property, and the setting of specifications for papers suitable for each use, based on the character of papers now in service.

In order to develop this program effectively, it has been decided to organize subcommittees on each major activity. The following subcommittees and chairmen have been appointed:

Use-Analysis Survey—P. K. Baird.
Thickness Method and Specifications—E. A. Bergholz.
Density Method and Specifications—G. R. Alden.
Ream-Weight Method and Specifications—G. R. Alden.
Strength-Properties Method and Specifications—R. H. Simmons.
Appearance-Properties Method and Specifications—G. K. Hamill.
Absorbency-Properties Method and Specifications—W. Otis Roe.
Elastic-Properties Method and Specifications—R. H. Doughty.
Penetration-Properties Method and Specifications—R. H. Norris.
Physical-Composition Method and Specifications—R. F. Reed.
Chemical-Composition Method and Specifications—J. E. Minor.
Structural-Properties Method and Specifications—W. A. Chilson.
Permanence-Properties Method and Specifications—P. B. Davidson.

The use-analysis subcommittee will attempt to classify all uses of papers and paperboards and to arrange the general and specific properties in order of importance for each particular use.

The efforts of each subcommittee should be directed toward the selection and development of test methods to show the true sheet properties. Having accomplished this, representative samples of papers apparently meeting the requirements of all the various uses should be tested and a set of specifications having minimum and maximum values drawn up.

1931-1932 Program

Each subchairman will be expected to have ready by February 1, 1932, for the next Annual Meeting, a report showing the progress made on his particular assignment in the following particulars: (1) the selection or development of a standard test method for each specific sheet property, and (2) the collection of material and test data to establish specifications.

It is expected that each subchairman will enlist as many other members of the Technical Association as he needs to expedite his subcommittee's program.

Printing Qualities of News Print Paper

1. Increase in the percentage of sulphite pulp increases the tensile and bursting strength of news print, but bleached sulphite does not increase the strength to the same extent as unbleached sulphite pulp.

2. Increase in the percentage of sulphite pulp apparently increases the basis weight for a given thickness.

3. Increase in the percentage of sulphite pulp decreases the ash content of the paper, although the ash content is higher when bleached pulp is used that is the case if unbleached pulp is used.

4. The opacity of paper decreases as the percentage of sulphite pulp increases. Ground wood pulp is most opaque, unbleached sulphite next, and bleached sulphite most transparent.

5. The gloss of the paper increases slightly with the increase in percentage of sulphite pulp. Bleached sulphite yields a lower gloss than corresponding amounts of unbleached sulphite pulp.

Wallace and Tiernan Joins TAPPI

Wallace and Tiernan Co., Inc., which for eighteen years manufactured various types of compressed gas apparatus, and various types of chemical equipment has become a contributing member of the Technical Association of the Pulp and Paper Industry.

The officers of the company include M. F. Tiernan, President-treasurer and C. F. Wallace, vice president and secretary. The company will be represented in the Technical Association by R. B. Martin.

For the past seven years and at a rapidly increasing rate during the past several years, larger numbers of pulp and paper mill officials have found that costly slime growth and stock decomposition no longer need be tolerated as necessary evils of pulp and paper production.

The Wallace & Tiernan Company have been active in developing methods for elimination of these two and associated causes of operation difficulties, and heve been rewarded by expression of gratitude granted them by numbers of paper mill officials.

During 1924 a paper mill organization in the Middle-West requested Wallace & Tiernan cooperation in the elimination of micro-organisms present in the mill fresh water supply which had apparently been responsible for spots, pin-holes, and discolorations in the finished product. For eleven years prior to this time Wallace & Tiernan Company and its staff of trained technicians had been actively promoting use of liquid chlorine for proper and safe sterilization of drinking waters and swimming pool waters, and the disinfection of sewage, together with a large number of special industrial uses. The experience gained permitted approach to the paper mill slime problem with confidence in the ability of controlled chlorination to eliminate the bacterial forms found in fresh water, white water, and stock lines of pulp and paper mills.

It is commonly known that troublesome slime growths in the paper making system originate through introduction of contaminating organisms carried with the fresh water supplied to the mill, and it may be understood that application of some sterilizing agent capable of killing these organisms and preventing re-growth in the mill system will have effective action in prevention of slime growth in fresh water, white water, and stock lines. Where slime growth is well established throughout these lines, and where re-growth is inevitable, continuous maintenance of free chlorine in the fresh water supplied to a mill operating on open system provides application of a widely distributed sterilizing action through the widespread use of fresh water. While in some cases it may be evident that the stock also is responsible for contamination of the pulp or paper making system, it is comparatively rare to find that separate treatment of the stock is required although where a mill is operating on closed system, accumulation of stock-contamination in the recirculated white waters makes necessary controlled application of chlorine in the closed white water system.

The W & T staff of trained engineers have been very successful in application of sterilization measures, and through their specialized knowledge and familiarity with numerous sterilization problems have been able to select methods of sterilization with a view toward accomplishing maximum return to the pulp and paper mill utilizing their equipment and service in elimination of slime difficulties.

Of interest is improvement in efficiency of filter plant operation through controlled application of chlorine in the raw waters ahead of the filter plant. Filter clogging, making necessary frequent washing of the filter bed, is due in most cases to slime growths embedded in the filters, binding the sand together, removed only with difficulty in the regular washing operations. Maintenance of a uniform quantity of chlorine in the water passing through the filter beds prevents growth of these slime organisms, permitting uniformily efficient filter operation, without the necessity for frequent washing, improving the rate of filtration and the length of filter runs.

In a number of pulp and paper mills the fresh water supplied is passed through surface condensers before use in the mill, and experience has shown that maintenance of active chlorine in the condenser cooling water has made possible prevention of slime growths on the surfaces of the condenser tubes, eliminating development of an insulating blanket in the surfaces of these tubes which normally interferes with proper heat exchange.

In many cases normally incidental benefits derived through chlorination have proven very valuable, and have strengthened the argument in favor of controlled chlorination as applied in the production of pulp and paper. Improvement in felt and wire life are among the more important of these incidental benefits, as indicated by the summary included in the reports of the Waste Committee, of the Technical Association of the Pulp and Paper Industry, as reproduced in convenient booklet form in the Wallace & Tiernan Technical Reprint 455, copies of which may be obtained by communication with Wallace & Tiernan Company, Inc., Box 178 Newark, New Jersey.

Cylinder Machine Sheet Formation

SPECIAL INQUIRY No. 163

A member writes: We are interested in the possibilities of making studies on the effect of current in the cylinder vat, in the hope that we can correlate this variable with the formation and characteristics of our products. Answers to the following questions will assist us in the solution of this problem:

1. Have you ever successfully measured the speed of the vat current?
2. What method or methods were used and which do you recommend? (describe equipment and methods.)
3. If you have not made such measurements how would you attempt to obtain them?
4. Do you think slight changes in the speed of the vat current affect the formation of the sheet?
5. Will measuring the speed of the current show up weight variations across the sheet?

All those replying to this inquiry will receive a copy of the replies received, in blank. Please send your replies to the Secretary of the Technical Association, 370 Lexington avenue, New York.

Asbestos Drier Felts vs Cotton Drier Felts

SPECIAL INQUIRY No. 164

A member writes: "We would like to have the opinions of users of asbestos drier felts and cotton drier felts regarding the relative merits of the two kinds of drier felts."

Replies to the following questionnaire should supply the information needed:

1. Kind of paper made?
2. Weight of paper made?
3. Relative life of asbestos and cotton dried felts? Average number of days (a) asbestos ——— (b) cotton ———
4. Pounds of paper dried per pound of felt (a) asbestos ——— (b) cotton ———
5. Relative cost per ton of paper?
6. Change in porosity of drier felt during its life (a) asbestos ——— (b) cotton ———
7. Difficulties in operating asbestos felts.
8. Adaptability of asbestos felts to high speeds (1,000 feet or faster)
9. Other advantages or disadvantages of asbestos drier felts compared with cotton drier felts.

Any one supplying information to this inquiry will receive a report containing all the replies received. Send your replies to the Secretary of the Technical Association, 370 Lexington avenue, New York.

POWER PLANT SECTION

REDUCING POWER COSTS THROUGH UNIT TREATMENT

Conducted by **Reginald Trautschold Consulting Engineer**

The Multiple Generator System of Control for Paper Machines*

By H. W. Rogers[1]

The past decade has probably witnessed more changes and improvements consummated in paper machines than took place in any previous period. This has been due in no small measure to the development of the sectional paper machine drive and to the opportunities it has afforded of investigating each detail in respect to machine operation and control. In fact, it is no exaggeration to say that the present-day high speed paper machine was actually brought about by the introduction of the sectional electric drive. The flexibility and close coordination of functioning machine elements so essential for the smooth and positive operation of the wide, large capacity machines which have literally revolutionized paper making practices were provided.

Extremely close speed regulation has had to be met, not only on the machine as a unit, but on the individual sections and between sections as well. Much wider speed ranges have been called for and it would seem that the sectional electric drive conforms best to these changing requirements.

The successful operation of paper machines by sectional electric drives was effected years ago, it is true, but much further progress has been made during the past few years in the way of refinements in control, in securing greater drive flexibility and in reducing the cost of the drives. Some of these ultra-refinements are the incorporation of automatic controls, remote control of "draw," sensitive voltage regulation and much closer speed control. The aim has been to secure greater simplicity, while maintaining the greatest possible flexibility and ease of control.

When one considers carefully the various methods of operation, it is evident that it is quite possible to alter the proportion of generating equipment, control apparatus and motors and to relocate, or rearrange, them to a considerable extent without affecting the total electrical equipment or the space requirements. For example, it may be possible to increase the generating equipment and decrease the control board or it may be possible to mount the speed regulating equipment upon the control board rather than in the machine room. Such modification, moreover, frequently result in decided adavantages to the operator, without any material increase in cost or any effect upon the space requirements.

Insofar as the paper making industry is concerned, there has been a twofold benefit in striving for a simplification of the paper machine, for the equipment manufacturers immediately undertook to design mechanical drives that would meet the high speed conditions of operation demanded and the limits to which they have gone in so doing has long since wiped out any price differential between mechanical and electrical drives. Also, the advocates of

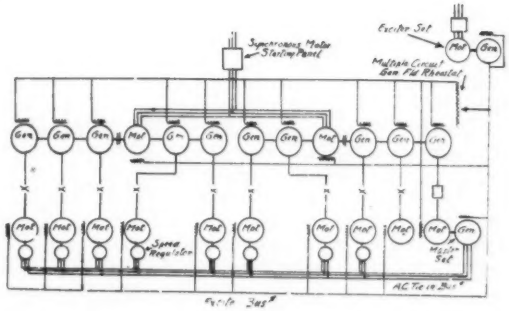


FIG. 2
Simplified connection diagram (full multiple generator control type system) of wiring at the Brown Paper Mill Co., Inc.

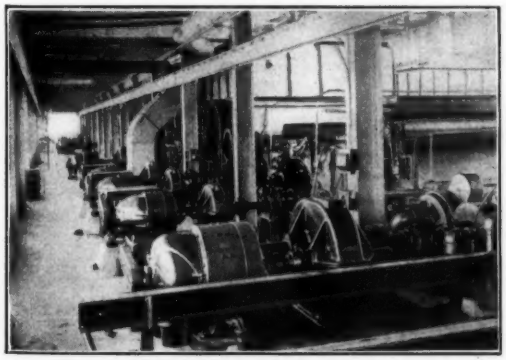


FIG. 1
Sectional paper machine drive (full multiole generator control type) on 178-inch, 100 to 1,000 ft. per min., kraft paper machine at the Brown Paper Mill Co., Inc., Monroe, La.

* An exclusive article in a program of discussions featuring notable improvements in pulp and paper mill equipment.

[1] Industrial Engineering Department, General Electric Co.

mechanical drives have taken a page from the history of the electric drive and have adopted the motor operated "draw" adjustment with control from the front side of the machine.

Sectional Electric Drives

The advantages of the sectional electrical drive have been recognized for years, of course, but as the niceties of its latent possibilities have been gradually developed a classification and brief exposition of these drives will be of interest. In their order, these developments well exemplify the flexibility of electrical equipment in meeting successfully the ever increasing demands of the trade.

All of the earlier drives incorporated rheostatic starting for the individual sections, wherein each section of the paper machine is provided with an individaul motor, either direct connected or geared, with contactor control and starting resistance. All motors operate from a common motor-generator set and the speed range of the paper machine is obtained by voltage control, the motors being started at whatever voltage the generator may be developing. Systems of this type have a maximum of flexibility, but heavy peak loads are imposed, especially when starting driers and calenders.

These peak loads are not necessarily objectionable, however, except for the full automatic control of the paper machine, provided the generator regulation is good and the proper type of voltage regulator is used. Furthermore, they can be avoided by the use of an additional generator used for starting purposes, the various sectional units being started one at a time by generator voltage (Ward-Leonard) control and transferred to the main generator only when they are up to speed.

A system of this character eliminates the heavy peak loads and reduces the duty on the voltage regulator to a minimum. It also eliminates all starting resistances, as well as the sectional master controllers and a large portion of the control contactors needed when rheostatic starting is employed, but the flexibility of the system is extremely limited. Also, and contrary to general belief, the system does not save any appreciable space.

Multiple Generator System of Control

Still another of the approved types, or systems, of control developed and the one with which this discussion is chiefly concerned is known as the multiple generator system, wherein each sectional motor unit is supplied with power from its own individual generator and generator voltage (Ward-Leonard) control is used throughout for starting, slow speed operation and running. In flexibility of control, this system is said to surpass all others, since

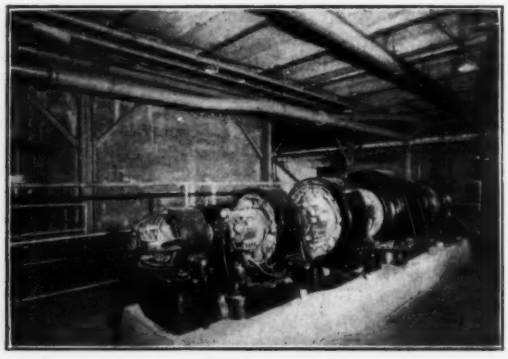


FIG. 3
Generator unit supplying power to the 178-inch, 100 to 1,000 ft. per min., sectional paper machine drive at the Brown Paper Mill Co., Inc.

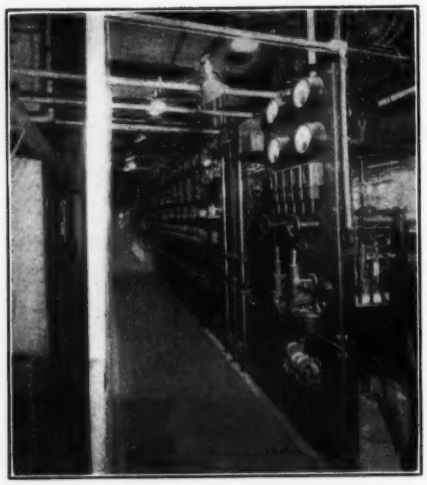


FIG. 4
Sectional paper machine drive control switchboard at the Brown Paper Mill Co., Inc.

it is possible to start or stop, operate at slow speed, jog or run all sections simultaneously.

The system requires a multiple generator set, wherein most of the generators are standard and interchangeable, but it eliminates all starting resistors, practically all control contactors, simplifies the wiring and does away with all peak loads. The control switchboard is reduced to an absolute minimum, the sectional speed regulators operating on the generator fields, rather than the motor fields. This arrangement gives the motors much greater torque and stability, permitting the use of somewhat smaller motors. This is especially advantageous at the lower operating speeds, the torque efficiency of the motors being constant.

The control of the machine, as a unit, is, incidentally, very similar to that exercised with either the rheostatic starting of auxiliary starting generator systems of sectional electric drives, since the main control rheostat is of the multiple circuit type and raises or lowers the speed of all units simultaneously. This permits the ready and effective combination of the multiple generator system of control with the resistance starting method and such combination systems haye been used to advantage to meet certain operating conditions or some specific requirement.

Full Multiple Generator Control

Equipments of the full multiple generator type, looked upon as the ultimate in flexibility, simplicity and refine-

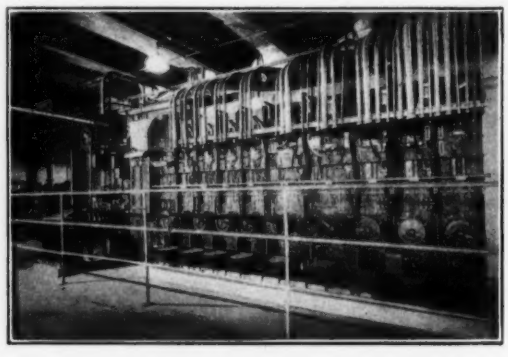


FIG. 5
Rear view of switchboard shown in Fig. 4.

ment, have been operating on wide range paper machines for a considerable time at the Brown Paper Mills, Inc., Monroe, La., an installation that is especially noteworthy. The paper machine in question is a 178-inch Fourdriner designed to operate over a speed range of from 100 feet per minute to 1,000 feet per minute and make Kraft paper from 300 pounds weight down to the lightest weights normally made at high speeds.

At the time the installation was made, several years ago now, the speed range, 10 to 1, was wider than that of any machine employing a sectional electric drive and presented problems that were then quite new. It was known that the use of speed regulators operating on a motor field, to maintain constant speed, detracts from the motor torque and makes it necessary to derate the motor or use larger capacity motors, in order to insure sufficient torque at the lower operating speeds. It was also appreciated that this effect increases as the speed range becomes wider, and at 10 or 12 to 1 it becomes an important factor from the point of view of the cost of the drive.

With the multiple generator system of control, however, the motors operate with a constant field and the speed regulators on the generator field, thereby maintaining constant speed by voltage control of the motor rather than by field control. The torque efficiency of the motor, consequently, remains constant and the full power of the motor is productively utilized. For these reasons, the 178-inch machine at the Brown Paper Mills was furnished with individual motors on each section, each taking power from its own individual generator set, the motor complement being:

Couch	150	horsepower
Press	60	
Press	60	
Press	60	
Driers	150	
Driers	150	
Calender	150	
Calender	150	
Reel	30	

In reality, the power set consists of two 6-unit sets, each driven by a synchronous motor and both of the larger synchronous motors controlled from the same starting panel.

The entire speed range is secured by voltage control

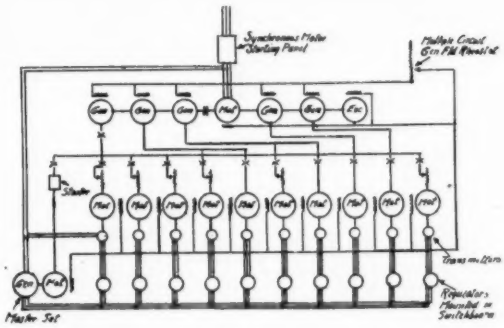


FIG. 7
Simplified connection diagram for modified multiple generator control type system.

(Ward-Leonard) through the medium of an eleven-circuit generator field rheostat with a single arm, as indicated on the accompanying simplified connection diagram. This rheostat is of the automatic variety and controls the speed of the master set simultaneously with the raising or lowering of the voltage on all of the individaul generators. Excitation is supplied by a separate motor- generator set and complete automatic control of each individual sectional motor is secured by push-button stations, through the medium of master switches mounted on the main control board.

A drive of this type eliminates all heavy starting resistors and accelerating contactors, simplifies the wiring to a great extent, reduces the control board very appreciably and affords the greatest flexibility in control. In space requirements, likewise, it compares favorably with any other variety of drive and is probably more readily understood than the more common systems of sectional drive in use at the present time. So satisfactorily has the system worked out at the Brown Paper Mills that in 1929 an additional multiple generator system of control was installed on another of the mill's 178-inch machines.

FIG. 8 AT RIGHT
Sectional paper machine (modified multiple generator control type system) switchboard.

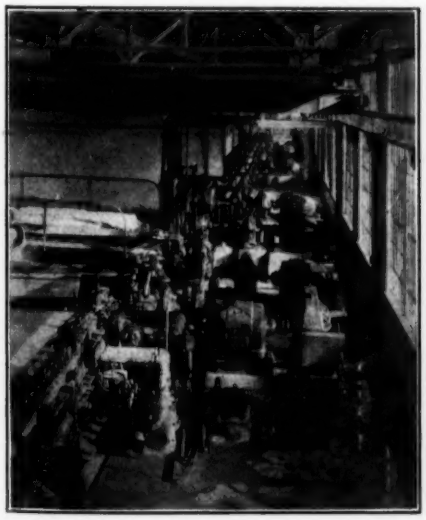


FIG. 6
Sectional paper machine drive (modified multiple generator control type) in prominent Pennsylvania paper mill.

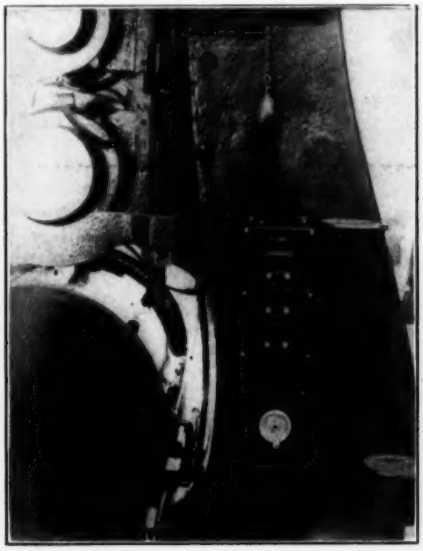
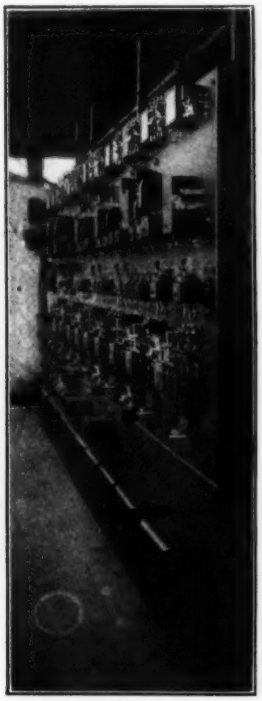


FIG. 9
Push button station and draw adjuster for calender section of sectional paper machine drive.



Modified Multiple Generator Control

In one of the prominent mills in the Philadelphia district employing a modern sectional electric drive for a 190-inch Fourdrinier, the conditions of operation are somewhat different and a combination system of multiple generator and rheostatic starting control has proved eminently satisfactory. The paper machine is designed for operation over a speed range of from 150 to 840 feet per minute, a speed range of 3.6 to 1, and consists of ten sections, including a smoothing press and a breaker stack, and is motored as follows:

Couch	145 horsepower
Press	120
Press	120
Smoothing Press	60
Driers	120
Breaker Stack	60
Driers	120
Calender	145
Calender	145
Reel	34

All these sections, except the driers and calenders, have relatively light starting duty and, except for the smoothing press and breaker stack, are operated from the main generator. That is, they employ rheostat starting and are equipped with automatic contactor control and starting resistors. Each drier section and each calender section is supplied, however, with power from its own individual generator and has the voltage control system of starting thereby avoiding the use of heavy duty starting resistors and the imposition of peak loads on the main generator.

The speed regulators, in the form of highly efficient switchboard device, are mounted, as in the cases of the installations at the Brown Paper Mills, Inc., on the control board and operate on the generator fields in the case of the drier and calender sections and on the motor fields on the remaining sections. The entire speed range is secured by voltage control through an automatic, multiple circuit, generator field rheostat and the speed of the machine as a unit is maintained by a master speed regulator.

This type of drive is exceedingly flexible and, while it does not avoid the use of heavy starting resistors and accelerating contactors as completely as the full multiple generator control, it does eliminate the heaviest resistors and accelerating contactors. The wiring is not complicated and the control board is compact and relatively simple. It, as well as the full multiple generator system of control, is equipped positive "draw" adjustment controllable from the front side of the machine and in general incorporates the refinements in control that have done so much to increase the flexibility of the modern sectional electric drive and to bring about substantial reductions in costs.

The simplified connection diagrams and the various equipment and installation views bring out other important details characterizing these modern paper machine drives and give some indication of their adaptability. They are well worthy of careful study on the part of every paper mill, particularly as any price differential which may have existed between mechanical and electric drives has, as previously stated, been long since wiped out.

Paper Distribution by Air Lines

WINDSOR LOCKS, Conn., September 29,1931.— C. H. Dexter & Sons, Inc. are making a feature of its Air Route bond line for use in the air mails. Arrangements have been made with the Pan-American airways to distribute these papers in Central and South America and in the West Indies. The paper is produced in five weights in white and in colors. Twenty letter heads of the 20-copy thickness weigh less than an ounce.

Better Demand in Indianapolis

INDIANAPOLIS, Ind., September 28, 1931.—A little expansion in paper demand is seen here with the coming of cooler weather and the opening of schools. The jobbers are a little more optimistic concerning the fine paper demand which has been none too good during the summer months. The purchases on the part of retailers to meet the initial school demand were just as light as they thought they could get by with and most of their stocks now are sadly depleted, they now being forced back into the market.

Some expansion is noted also in the demand for news print, another commodity that has not been moving as rapidly during the past summer. The advertisers in pushing their fall merchandise have been taking more space and the papers have been forced to enlarge their pages. Many of them, however, have seen a way to part way get even for a poor summer by cutting down their reading columns.

Manufacturers of cartons and board are working a little more than usual and report a gradually expanding demand for their products. The makers of containers here, however, report that with the approach of cooler weather there has been a restricted demand from the ice cream trade. The jobbers of summer specialties, such as plates, cups, napkins also have felt the first pinch of cooler weather.

Building papers just now are at a low ebb. Not during the year has there been a good demand, just a flurry in the spring. The volume for the year will be considerably behind that of last year unless something unusual occurs this fall.

Business should be good with the manufacturers of greeting cards, for the usual swarm of canvassers have begun their annual pilgrimage from house to house and office to office. And some of them say they are getting more response than they did last year. It seems to be their opinion that greeting cards will take the place of a lot of presents this merry holiday season.

Paper stock shows little change. Local paper stock men say the mills are offering very low prices.

Improved Conditions Reported

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., September 28, 1931.—Improved business conditions are reflected in reports from a number of leading paper mills in the district. Some time ago the F. C. Huyck & Sons Company realized that they must meet competition with a cheaper product which has met with favor from the start. Results have been the taking on of about 50 more workers to bring the total force in excess of 700 men and women. The plant is now running with night shifts because of the increased volume of business. Officials claim that they have benefited considerably through introduction of the new line.

An expansion program is also under way at the plant of the Wheeler Paper Corporation in North Broadway. The company is preparing for the installation of several new machines because of increased business while it is probable that the working force will also be enlarged. The firm started operations several months ago and its growth already is considered remarkable. The Albany Felt Company is also maintaining steady operations although not quite on capacity basis. In the village of Castleton the Fort Orange Paper Company has been operating at capacity for several months with prospects of maintaining these schedules indefinitely. The company employs 350 hands steadily.

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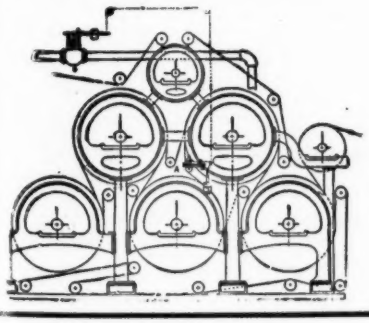

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YOU'LL MAKE NO MISTAKE IN ACCEPTING IT

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will do everything we claim for it and more. The test costs you nothing until you are satisfied. Many mills tried one and now have every machine equipped. Write for list of users and other information.

W. F. PICKLES **Buckland, Conn.**

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING SEPTEMBER 26, 1931

SUMMARY

Cigarette paper	358 cs.
Wall paper	7 bls., 11 cs.
Paper hangings	2 bls., 5 cs.
Painted paper	1 cs.
News print	917 rolls
Printing paper	10 rolls, 69 cs.
Wrapping paper	26 bls.
Filter paper	58 cs.
Drawing paper	9 rolls, 62 cs.
Parchment paper	2 cs.
Tissue paper	4 cs.
Surface coated paper	52 cs.
Metal coated paper	167 cs.
Baryta coated paper	13 cs.
Coated paper	10 cs.
Photo paper	5 cs.
Transfer paper	44 cs.
Decalcomania paper	1 cs.
Colored paper	2 cs.
Envelopes	14 cs.
Letter paper	3 cs.
Writing paper	7 cs.
Raw card	5 cs.
Straw boards	4 bls.
Paper tubes	35 cs.
Paste board	76 cs.
Card board	266 cs.
Card board boxes	82 cs.
Miscellaneous paper	314 rolls, 191 bls., 61 cs.

CIGARETTE PAPER

Suarez & Crespo, M. de Commilas, Alicante, 5 cs.
Champagne Paper Corp., France, Havre, 25 cs.
American Tobacco Co., France, Havre, 150 cs.
Standard Products Corp., France, Havre, 141 cs.
Brown & Williamson Tobacco Co., France, Havre, 12 cs.
Brown & Williamson Tobacco Co., Homeric, Southampton, 25 cs.

WALL PAPER

R. F. Downing & Co., Homeric, Southampton, 1 cs.
Irving Trust Co., Albert Ballin, Hamburg, 9 cs.
F. J. Emmerich, Albert Ballin, Hamburg, 7 bls., 1 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Minnewaska, London, 3 cs., 2 bls.
Whiting & Patterson Co. Inc., Homeric, Southampton, 1 cs.
F. L. Kramer & Co., Homeric, Southampton, 1 cs.

PAINTED PAPER

Hudson F'd'g & Shipping Co., France, Havre, 1 cs.

NEWS PRINT

Stora Kopparberg Corp., Kungsholm, Gothenburg, 26 rolls.
Walker Goulard Plehn Co., Kungsholm, Gothenburg, 100 bls.
Perkins Goodwin & Co., Berlin, Bremen, 42 rolls.
Jay Madden Corp., Berlin, Bremen, 428 rolls.
——, Albert Ballin, Hamburg, 39 rolls.
A. S. Zabriskie, Pr. Harding, Hamburg, 44 rolls.
Jay Madden Corp., Pr. Harding, Hamburg, 47 rolls.
Perkins Goodwin & Co., Pr. Harding, Hamburg, 191 rolls.

PRINTING PAPER

Oxford University Press, Britannic, Liverpool, 9 cs.
P. C. Zuhlke, Westernland, Antwerp, 39 cs.
——, Caronia, London, 1 cs.
New York Public Library, Berlin, Bremen, 5 cs.
International F'd'g Co., H. Jaspar, Antwerp, 11 cs.
E. Dietzgen & Co., Albert Ballin, Hamburg, 4 cs.
Keuffel & Esser Co., Pr. Harding, Hamburg, 10 rolls.

WRAPPING PAPER

——, Westernland, Antwerp, 26 bls.

FILTER PAPER

H. Reeve Angel & Co. Inc., Caronia, London, 8 cs.
H. Reeve Angel & Co. Inc., Homeric, Southampton, 5 cs.
E. Fougera & Co., Homeric, Southampton, 46 cs.

DRAWING PAPER

Keuffel & Esser Co., Caronia, London, 2 cs.
Keuffel & Esser Co., Pr. Harding, Hamburg, 60 cs., 9 rolls.

PARCHMENT PAPER

F. B. Vandegrift & Co., France, Havre, 2 cs.

TISSUE PAPER

W. J. Byrnes & Co., Homeric, Southampton, 3 cs.
W. J. Byrnes & Co., Acquitania, Southampton, 1 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Westernland, Antwerp, 37 cs.
P. C. Zuhlke, Berlin, Bremen, 4 cs.
——, Albert Ballin, Hamburg, 11 cs.

METAL COATED PAPER

Winter Wolff & Co., Rotterdam, Rotterdam, 136 cs.
K. Pauli Co., Berlin, Bremen, 22 cs.
K. Pauli Co., Albert Ballin, Hamburg, 6 cs.
Taub Hummell & Schnall, Albert Ballin, Hamburg, 3 cs.

BARYTA COATED PAPER

Globe Shipping Co., Berlin, Bremen, 13 cs.

COATED PAPER

F. G. Gerlach, Berlin, Bremen, 10 cs.

PHOTO PAPER

J. J. Gavin, Homeric, Southampton, 5 cs.

TRANSFER PAPER

F. L. Kramer & Co., Berlin, Bremen, 44 cs.

DECALCOMANIA PAPER

C. W. Sellers, Bremen, Bremen, 1 cs.

COLORED PAPER

Weiss Forwarding Co., Albert Ballin, Hamburg, 2 cs.

ENVELOPES

J. Beckhard & Co., Berlin, Bremen, 13 cs.
C. Zeiss, Inc., Albert Ballin, Hamburg, 1 cs.

LETTER PAPER

Japan Paper Co., Saturnia, Trieste, 3 cs.

WRITING PAPER

J. Wanamaker, Berlin, Bremen, 3 cs.
Stern Bros., Leviathan, Havre, 3 cs.
American Express Co., Vincent, Havre, 1 cs.

RAW CARD

F. C. Strype, Bremen, Bremen, 5 cs.

STRAW BOARDS

American Express Co., Rotterdam, Rotterdam, 4 bls.

PAPER TUBES

Thomas & Co., Albert Ballin, Hamburg, 35 cs.

PASTE BOARD

Colmar Paper Corp., Westernland, Antwerp, 10 cs.
——, Pr. Harding, Hamburg, 66 cs.

CARD BOARD

American Express Co., Albert Ballin, Hamburg, 250 cs.
Phoenix Shipping Co., Pr. Harding, Hamburg, 16 cs.

CARD BOARD BOXES

Gevaert Co. of America, Westernland, Antwerp, 1 cs.
Henschel Naeve Co., Berlin, Bremen, 44 cs.
Heemsoth Basse & Co., Berlin, Bremen, 27 cs.
M. Tannenbaum & Co., Albert Ballin, Hamburg, 10 cs.

MISCELLANEOUS PAPER

The Borregaard Co. Inc., Kungsholm, Gothenburg, 11 rolls, 17 bls.
Lunham & Reeve, Kungsholm, Gothenburg, 303 rolls, 174 bls.
Keuffel & Esser Co., Rotterdam, Rotterdam, 14 cs.
Keller Dorian Paper Co., France, Havre, 6 cs.
Stern Bros., France, Havre, 16 cs.
Japan Paper Co., France, Havre, 2 cs.
Vogue Hat Co., Rochambeau, Havre, 3 cs.
——, Albert Ballin, Hamburg, 20 cs.

RAGS, BAGGINGS, ETC.

J. Cohen & Sons, Britannic, Liverpool, 24 bls. rags.
M. Snedeker Corp., Britannic, Liverpool, 95 bls. paper stock.
E. J. Keller Co. Inc., Berlin, ——, 16 bls. rags.
Chase National Bank, Exermont, Barcelona, 67 bls. bagging.
E. J. Keller Co. Inc., Exermont, ——, 97 bls. bagging.
Transatlantic Animal By-Products Corp., Ambridge, Antwerp, 150 bags glue stock.
Darmstadt Scott & Courtney, Ambridge, Antwerp, 37 bls. jute waste.
Darmstadt Scott & Courtney, Vincent, Havre, 107 bls. jute waste.
——, Alberta, Trieste, 42 bls. rags.
——, Alberta, Naples, 31 bls. rags.
E. J. Keller Co. Inc., Exilona, ——, 79 bls. rags.

OLD ROPE

Banco Com'l Italiana Trust Co., Pr. Harding, Hamburg, 77 bls.

CHINA CLAY

L. A. Salomon & Bro., Britannic, Liverpool, 110 casks; 460 bags.

CASEIN

A. Hurst & Co., N. Amsterdam, Rotterdam, 63 bags.
A. Hurst & Co., France, Havre, 117 cases.

WOOD PULP

Bulkley Dunton & Co., Kungsholm, ——, 900 bls. sulphite.
Russell McCandless, Kungsholm, Stockholm, 300 bls. unbleached sulphite.
M. Gottesman & Co. Inc., Kungsholm, Gothenburg, 2125 bls. sulphite.
E. M. Sergeant & Co., Kungsholm, Gothenburg, 449 bls. kraft soda.
Perkins Goodwin & Co., Kungsholm, Gothenburg, 315 bls. sulphate.
Lagerloef Trading Co., Blankaholm, Helsingfors, 1249 bls. sulphite.
Castle & Overton, Inc., Blankaholm, Wiborg, 2128 bls. dry cellulose; 680 bls. sulphate.
Lagerloef Trading Co., Blankaholm, Wiborg, 260 bls. wood pulp.
Lagerloef Trading Co., Blankaholm, Kami, 2840 bls. sulphate.
Lagerloef Trading Co., Blankaholm, Rauma, 473 bls. sulphite; 260 bls. mechanical pulp.
Irving Trust Co., Berlin, Bremen, 375 bls. wood pulp.
Castle & Overton, Inc., Albert Ballin, Hamburg, 1735 bls. wood pulp, 347 tons.
Russell McCandless, Albert Ballin, Hamburg, 125 bls. unbleached sulphite.
Chemical Bank & Trust Co., Stavangerfjord, Oslo, 300 bls. sulphite.
J. Anderson & Co., Stavangerfjord, Oslo, 250 bls. sulphite; 125 bls. sulphite.
J. Anderson & Co., Stavangerfjord, Sarpsborg, 150 bls. sulphite.
Atterbury Bros. Inc., Stavangerfjord, Oslo, 499 bls. mechanical pulp.
M. Gottesman & Co. Inc., Alberta, Sebenico, 5200 bls. wood pulp.

PULPWOOD

Amtorg Trading Corp., (Albany), Minnequa, Leningrad, 2918 cords.
Krogstad Shipping Co., Orania, Richibucto, 1160 cords.
G. S. Kerr Co. Ltd., Dampfire, Richibucto, 1200 cords.

(Continued on page 54)

a clean cut ~ a sure cut ~ a shear cut ~

— dust-free rolls?

sure!

LANGSTON
Slitters & Rewinders

CLEAN
SHEAR CUT
CUT

a shear cut ~ a clean cut ~ a sure cut ~ a shear cut ~

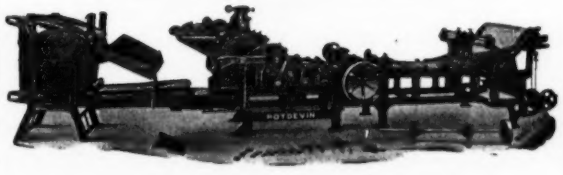
AMIJEL

AMIJEL is not an ordinary beater starch—it is a specially processed, pure gelatinized starch—ready for use. Does not have to be cooked. Just add in dry form to the beater.

CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York City

NEW POTDEVIN SACK

CEMENT BAG MACHINE



3 Sizes—NAIL—FLOUR—CEMENT

2-COLOR RUBBER TYPE PRINTING

POTDEVIN MACHINE CO.

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Phones: Windsor 1700-1701-1702

West Virginia Pulp and Paper Company

Manufacturers of

SUPERCALENDERED
and
MACHINE FINISHED BOOK
and LITHOGRAPHIC
PAPERS

Offset, Envelope, Bond, Writing Cover and Music Paper, High Grade Coated Book, Index Bristol, Post Card, Kraft and Label Papers

also

Bleached Spruce Sulphite and Soda Kraft Pulp

230 Park Ave. New York
35 East Wacker Drive Chicago
503 Market St., San Francisco, Cal.
Sixth and Chestnut Sts., Philadelphia, Pa.

Imports of Paper and Paper Stock

(Continued from page 52)

WOOD FLOUR

State Chemical Co., Rotterdam, Rotterdam, 400 bags.
Trust Co., of New Jersey, Rotterdam, Rotterdam, 400 bags.
——, Stavangerfjord, Gresvik, 650 bags.
B. L. Soberski, Stavangerfjord, Frederickstad, 1875 bags.

PHILADELPHIA IMPORTS

WEEK ENDING SEPTEMBER 26, 1931

T. M. Duche & Sons, Ambridge, Antwerp, 922 bags glue stock.
E. Butterworth & Co. Inc., Ambridge, Antwerp, 139 bls. rags.
West Phila. Supply Co., Ambridge, Antwerp, 1 cs. parchment paper.
Transatlantic Animal By-Products Corp., Ambridge, Antwerp, 150 bags glue stock.
J. L. Shoemaker Co., Ambridge, Antwerp, 3 cs. paper.
S. E. Ingber Co., Ambridge, Antwerp, 65 bls. rags.
Castle & Overton, Inc., Ambridge, Rotterdam, 2000 bls. wood pulp, 320 tons.
Russell McCandless, Elmnhorn, Gothenburg, 150 bls. unbleached sulphite.

NORFOLK IMPORTS

WEEK ENDING SEPTEMBER 26, 1931

——, Norwegian, Manchester, 67 bls. bagging.
——, Norwegian, Liverpool, 17 bls. bagging.

BALTIMORE IMPORTS

WEEK ENDING SEPTEMBER 26, 1931

S. Schapira & Son, Vincent, Dunkirk, 81 bls. rags.
Maritime F'd'g Co., Vincent, Havre, 196 bls. rags.

BOSTON IMPORTS

WEEK ENDING SEPTEMBER 26, 1931

G. F. Malcolm Inc., Britannic, Liverpool, 4 cs. tissue paper; 26 cs. carbonizing tissue.
C. A. Haynes & Co., Ambridge, Antwerp, 587 bls. glue stock.
New England Waste Co., Ambridge, Antwerp, 17 bls. cotton waste.
J. Lappin, Ambridge, Antwerp, 1 bl. wall paper.
T. M. Duche & Sons, Ambridge, Antwerp, 1372 bags glue stock.
Irving Trust Co., Ambridge, Antwerp, 58 bls. bagging.
Spaulding Fibre Co., Ambridge, Antwerp, 575 bls. flax waste.
Brown Bros. Harriman & Co., Ambridge, Antwerp, 67 bls. old rope.
Castle & Overton, Inc., Ambridge, Rotterdam, 2800 bls. wood pulp, 448 tons.
D. C. Andrews & Co., Norwegian, Liverpool, 14 bls. bowl paper.
Baring Bros. & Co., Norwegian, Manchester, 460 bags hide cuttings.

PORTLAND IMPORTS

WEEK ENDING SEPTEMBER 26, 1931

Lagerloef Trading Co., Blankaholm, Wiborg, 3740 bls. sulphate; 4238 bls. sulphite.
Lagerloef Trading Co., Blankaholm, Kemi, 2000 bls. sulphite; 691 bls. sulphate.
Lagerloef Trading Co., Blankaholm, Rauma, 7897 bls. sulphite; 520 bls. mechanical pulp.

Amalgamated Paper Co. To Build

FORT EDWARD, N. Y., September 28, 1931.—The Amalgamated Paper Company plans to break ground for a large new addition adjoining the main factory as soon as title to the land can be obtained. It was announced that the structure would be 50 by 150 feet with all modern conveniences. The company has been considering the erection of a new annex for several weeks but has awaited for bids from contractors before making its decision. The increasing volume of orders for tablets and school supplies during the past few months has outgrown the present manufacturing facilities which was the principal factor in the decision to expand.

The company has been seriously handicapped for some time by lack of space to care for its growing business which has made it necessary to operate day and night in order to fill contracts. These schedules are now in effect. Many new hands have been taken on in recent months and with the new addition in operation it is understood that the force will be doubled. The present factory was built about two years ago when the company moved here from Brooklyn. It is built on land taken over from the International Paper Co. which supplies much raw stock to the local concern. A branch office is maintained in New York City and a considerable portion of the orders come from educational boards, colleges and public schools in all sections.

Canada Paper and Howard Smith

MONTREAL, Que., September 21, 1931.—Preferred shareholders of Canada Paper Company have approved cancellation of the lease of the business to St. Maurice Valley Corporation and the sub-lease thereof to Howard Smith Paper Mills. As a result both lessees are relieved of obligations in respect of guarantee of Canada Paper bond interest and preferred dividends, while Canada Paper itself is relieved of indebtedness incurred from advances made to it by both St. Maurice and Howard Smith. Canada Paper has coming to it amounts totalling not more than $397,107 from Canada Power and Paper Corporation, under the provisions of the agreement in respect of kraft paper manufactured by the latter. These amounts will now be credited to Canada Power as a consideration for cancelling its advances made to Canada Power. (Canada Power, when it took over the St. Maurice Valley Corporation, disposed of Canada Paper to the Howard Smith, Mills.)

Howard Smith now assumes responsibility for the amounts advanced to Canada Paper and will pay such sums to Canada Paper on or before the date when they become due.

In this way the situation has been cleared up. Canada Paper will be cleared of its indebtedness to St. Maurice and Howard Smith. It will have a substantial working capital, it is understood, and future bond interest and preferred dividends will depend on earnings of the company itself. The old lessee and sub-lessee are cleared of their obligation; Howard Smith retains control of Canada Paper through common stock ownership.

Bids for Government Paper

WASHINGTON, D. C., September 28, 1931.—The Government Printing Office has received the following bids for 32,760 pounds of 39 x 48 supercalendered kraft map paper; Stanford Paper Company, at 8.3 cents per pound; Virginia Paper Company, Inc., 11.05 cents; American Writing Paper Company, Inc., 13.5 cents; P. R. Andrews Paper Company, 11.9 cents; The Whitaker Paper Company, 11.13 cents; Reese & Reese, Inc., 10.4 cents; Mathers-Lamm Paper Company, 9.25 cents, 10.08 cents; and 9 cent; Brown Company, 10.55 cents; and W. L. Jones, Inc., 10.5 cents.

The following bids were also received for 10,725 pounds, of 26 x 42 rope manila drumhead paper; Walker Goulard Phehn Company, Inc., 16.5 cents per pound; Virginia Paper Company, Inc., 17.66 cents; Reese & Reese, Inc., 15.95 cents; R. P. Andrews Paper Company, 16.7 cents; Old Dominion Paper Company, 16.99 cents; Whitaker Paper Company, 16.54; Mathers-Lamm Paper Company, 16.58 cents; and Tarentum Paper Mills, 12 cents.

Finnish Pulp and Paper Markets Stock

WASHINGTON, D. C., September 23, 1931.—A report to the Department of Commerce states that the usual summer slackness has been apparent in the Finnish pulp and paper markets. There was but little activity in the newsprint field but a fair number of orders were received by the manufacturers of thin printings.

QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

The Borregaard Company
Incorporated
200 FIFTH AVENUE NEW YORK, N. Y.

Glens Falls Machine Works

GLENS FALLS, N. Y.

Manufacturers of

IMPROVED ROGERS AND SPECIAL WET MACHINES

STANDARD WET MACHINES

GLENS FALLS ROLLING ACTION FLAT SCREEN

THE A. D. WOOD SAVEALL, THICKENER, WASHER AND WATER SCREEN

GLENS FALLS DECKER AND DECKER WASHER

GLENS FALLS ROTARY SULPHUR BURNER

PULP GRINDERS, THREE OR FOUR POCKET (Roller Bearings)

Ask us about the
OLIVER-ROGERS WET MACHINE

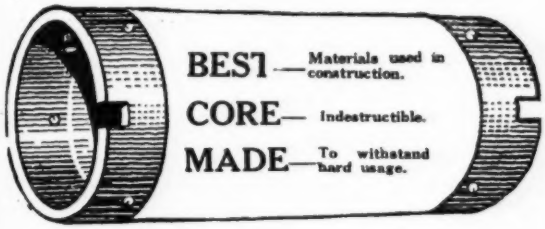
SHIPPING INSURANCE

The Use of

ELIXMAN CORES

protects your rolls and insures their delivery to your customer in perfect condition. They eliminate claims for damages.

SHIPPING INSURANCE



Your two sources of supply are

Canadian Elixman Company
HAMILTON ONTARIO

Elixman Paper Core Company
CORINTH N Y

Chemipulp Process:

FOREMOST IN SERVING CHEMICAL PULP MILLS

TO — Improve efficiency.
— Reduce costs.

BY — Modern scientific methods.
— Wide operating experience.

Hot SO_2 Liquor & Gas Recovery—eliminates expensive cooling equipment — recovers heat — saves steam — eliminates acid dilution from steam condensation — reduces boiler load peak — strengthens acid — accelerates penetration — cuts sulphur — increases yield and capacity — has been termed, " the all round fixer" for SULPHITE making.

Broadly Covered by U. S. and Canadian Patents

CHEMIPULP PROCESS, INC.

330 Woolworth Bldg., Watertown, N. Y.
1017 White Bldg., Seattle, Wash.

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319 Castle Bldg., Montreal, Que.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, September 30, 1931.

Conditions in the local paper market are fairly satisfactory, considering the general business depression. Demand for the various standard grades is moderately active. Sales forces of the leading paper organizations are hopeful of improvement in the near future. Competition for orders is exceptionally keen and prices are somewhat spotty.

News print production was maintained at approximately 56 per cent of rated capacity during the past week, according to information gathered by the News Print Service Bureau. Shipments are keeping up with output. The price situation continues unsatisfactory, despite efforts to stabilize the market.

The paper board market is more active than of late. Box board mills are now operating at 70 per cent of capacity. Prices are irregular. Demand for the various grades of fine paper is slightly better and tissues are going forward in seasonal volume. Weaknesses developed in the coarse paper market and reports of shading were frequent.

Mechanical Pulp

Steadiness prevails in the ground wood market. Production in North America and abroad is practically keyed to consumption and, with offerings not excessive, the industry is in a sound statistical position. The contract movement is about normal for the time of year. Prices are holding to schedule.

Chemical Pulp

The chemical pulp market was easier during the past week and prices on several of the grades declined slightly. In view of the revised quotations, demand for several of the grades is expected to expand in the near future. Imported easy bleaching sulphite is now offered at from $2.00 to $2.10, and No. 1 strong unbleached at from $1.80 to $2.15, on dock, Atlantic ports.

Old Rope and Bagging

Quietness reigns in the old rope market. Demand for both imported and domestic old manila rope is restricted, while little interest is being displayed at present in small mixed rope. The bagging market is fairly steady. Scrap bagging is exhibiting a strong undertone and gunny bagging is in improved request.

Rags

The domestic rag market continues listless. Demand for the various grades of cotton cuttings is light. Roofing grades, however, are going forward in fair volume. Mixed rags are decidedly dull at present. Some improvement was noticed in the imported rag market. Prices on both domestic and imported grades are practically unchanged.

Waste Paper

Business in the paper stock market is more active than for some time past. Demand for the lower grades from the board mills is persistent and, with offerings limited, prices rule steady to firm. Strictly folded news and No. 1 mixed paper are displaying a particularly strong trend. While not quite so buoyant, the higher grades are in satisfactory request, and prices are well maintained.

Twine

The position of the local twine market is practically unchanged. The volume of sales transacted during the past week compares favorably with the record of a year ago. There are a fair number of inquiries around for future needs and the outlook for the closing months of the year is promising. Prices generally remain unaltered.

Boston Paper Market Improved

BOSTON, Mass., September 28, 1931.—Jobbers generally around the Hub note a continued improvement in the paper market, with the last week slightly better than the previous one. The total volume, however, can hardly be regarded as more than moderate. A fine paper dealer says his company is getting its share of what business there is, but that this portion is nowhere near what it should be, and this statement undoubtedly holds good for at least some other concerns. In some quarters of the market the demand is spasmodic, but in a sufficient volume to be regarded as "favorable." The seasonal call for announcement lines is sustained. Bonds and ledgers and material for printers are in fairly satisfactory demand. Fancy papers for box coverings are also selling well.

Wrapping paper shows a little improvement, with prices holding firm. Indications are that September sales have been in a larger volume than in August.

The demand for box board continues with a moderate amount moving. The call from the manufacturers of shoe boxes and candy boxes is sustained.

The general situation in paper stock is practically unchanged, although there is a slight variation in some of the quotations from those of a week ago. The drop in pound sterling is naturally expected to raise the price of paper in England. In the local market No. 1 kraft is easier, and quoted at 1.15 to 1.20, compared with a former range of 1.25 to 1.35. No. 1 mixed papers continue very firm, and quotable at .25 to .35. Old newspapers are a little stronger, with the minimum figure .32½ and the high side around .35 to .40.

Moderate-sized sales have taken place in the twine market.

Seaman Paper Co. Handling Tonawanda

J. L. Fearing, vice-president and sales manager of the International Paper Company, states that the Seaman Paper Company will continue, as in the past, to handle the major portion of the product of the International's Tonawanda mill. The unsold balance of the output of the Tonawanda mill, formerly owned by the Tonawanda Paper Company, will be sold under Mr. Fearing's direction through the Sales Department of the International Paper Company.

TI MACHINE SEMI-STEEL
SECTIONAL BURRS

Manufactured in 3, 4, 5, 6 and 7 cuts per inch.
—
3" Diam.

SHARP
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STRONG
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TOUGH

ILLUSTRATION SHOWS ½ SIZE

OTHER SPECIALTIES

WARREN IMPROVED CALENDER With flexible blades, Universal Adjustment and Control, Patented — DOCTORS

WARREN IMPROVED DOUBLE DRUM— WINDER

BALL HYDRANT for Stock Circulating Systems — VALVES

AND OTHER PAPER MILL MACHINERY

MANUFACTURED BY
TICONDEROGA MACHINE WORKS
TICONDEROGA, N. Y.
SEND FOR BULLETINS—ASK FOR PRICES.

EXTENSION MODEL

Cambridge Surface Pyrometer

is an instrument which applied to the surface of a dryer or calender roll, instantly indicates the exact surface temperature. Its use enables the operator to locate water logged rolls and to maintain every roll at the correct temperature for efficient progressive drying.

The instrument is compact, rugged and easy to read. The extension rod permits temperature checking across the entire roll. Scale ranges are 50-250° and 50-400°F.

Send for List No. 194-P.T.

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3512 GRAND CENTRAL TERMINAL, NEW YORK

WOOD PULP
AGENTS

PRICE & PIERCE, Ltd.,

60 EAST 42nd ST.
NEW YORK

Typical Downingtown Products of Chrome Iron

TANKS, SHAPES, PIPING
—by DOWNINGTOWN!

When we say that Downingtown makes virtually any steel Shape, Digester, Shell, Tank, Pipe, etc., needed in the paper industry, we do not tell the whole story.

—For Downingtown is prepared to make these of ordinary Carbon Steel, or Chromium Iron Alloys, such as 18-8, and also Everdur, Aluminum, or nickel-clad steel, used welded or riveted fabrication, or a combination of these. . . .

Furthermore, Downingtown is equipped for *erection in the field.* We solicit your inquiries on the basis of experience (we are "pioneers" in chrome), facilities, and fair prices. CONSULT US.

DOWNINGTOWN IRON WORKS
Pioneers in Chrome — ACID TYPE — *Iron Fabrication*

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, September 30, 1931.

BLANC FIXE.—The condition of the blanc fixe market is practically unchanged. Contract shipments are moving in fair volume. The pulp is quoted at from $42.50 to $45.00 per ton, while the powder is selling at from 3¾ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—Steadiness prevails in the bleaching powder market, although the prevailing demand is light. Prices are generally holding to previously quoted levels. Bleaching powder is quoted at from $1.75 to $2.00 per 100 pounds, in drums, at works.

CASEIN.—The casein market is firmer. Domestic standard ground is now quoted at 6½ cents and finely ground at 7½ cents per pound. Argentine standard ground is selling at 8½ cents and finely ground at 9½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Trading in the caustic soda market is only moderately active. Prices remain unchanged. Solid caustic soda is quoted at from $2.50 to $2.55; while the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market is fairly steady. Contract shipments are moving at a normal pace for the season. Imported china clay is quoted at from $13 to $21 per ton, ship side; while domestic paper making clay is selling at from $7 to $11 per ton, at mine.

CHLORINE.—Most of the business transacted in the chlorine market during the past week was along routine lines. Prices are generally holding to schedule. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market continues easy. The grades of gum rosins used in the paper mills are now quoted at from $3.95 to $4.15 per 280 pounds, in barrels, at works. Wood rosin is selling at $3.70 per 280 pounds, in barrels, on dock, at lot quantities.

SALT CAKE.—Demand for salt cake is light at present. Prices are holding to schedule. Salt cake is quoted at from $16 to $17 and chrome salt cake at from $14 to $15 per ton, in bulk, at works. Imported salt cake is selling at from $15 to $15.50 per ton, ship side.

SODA ASH.—The soda ash market continues quiet. Supplies are going forward to the paper mills in fairly heavy volume. Quotations on soda ash in car lots at works, per 100 pounds, are as follows: in bulk, $1.00; in bags, $1.25; and in barrels, $1.38.

STARCH.—Conditions in the starch market are practically unchanged. The contract movement is well up to average. Prices remain unaltered. Special paper making starch is quoted at $2.67, in bags; and at $2.94 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Most of the business transacted in the sulphate of alumina market was routine. Prices remain unchanged. Commercial grades are quoted at from $1.25 to $1.40, while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR—The sulphur market is rather dull. Sulphur is quoted at $18 per long ton on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton for any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Demand for talc is fairly persistent. The contract movement is normal for the time of year. Prices are holding to previously quoted levels. Domestic talc is selling at from $16 to $18 per ton, in bulk; and imported talc at from $18 to $22 per ton, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00	@	38.00
Bonds	6.75	@	53.25
Writings—			
Extra Superfine	14.00	@	32.00
Superfine	14.00	@	32.00
Tub sized	10.00	@	15.00
Engine sized	6.75	@	11.00
Book, Cased—			
S. & S. C.	5.25	@	—
M. F.	5.00	@	—
Coated and Enamel	6.75	@	10.25
Lithograph	7.25	@	11.75
Tissues—Per Ream—			
White No. 1	.65	@	.70
Anti-Tarnish M. G. only	.65	@	.70
Colored	.70	@	.90
White No. 2	.55	@	.60
Kraft	.65	@	.70
Manila	.55	@	.60
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.09¼	@	—
No. 2	.11¼	@	—
Bleached, basis 20 lbs.	.11¼	@	—

(Delivered New York)

News, per ton—			
Rolls, contract	57.00	@	—
Rolls, spot	57.00	@	—
Sheets	62.00	@	—
Side Runs	42.00	@	46.00
Kraft—			
No. 1 Domestic	4.50	@	5.75
No. 2 Domestic	4.00	@	4.50
Southern	3.45	@	4.25
Imported	6.00	@	7.00
Boards—per ton—			
News	26.00	@	27.50
Straw	34.50	@	45.00
Chip	25.00	@	27.50
Binders' Boards	62.00	@	70.00
Standard 85 Test Liner	32.50	@	35.00
Sgl. Mla. Ll. Chip	37.50	@	42.50

(F. o. b. Mill)

Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—			
Moist	24.00	@	28.00
Dry	26.00	@	28.00

(F. o. b. Mill)

No. 1 Domestic	25.00	@	30.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	2.50	@	3.50
Easy Bleaching	2.00	@	2.10
No. 1 strong unbleached	1.80	@	2.15
Mitscherlich unbleached	1.85	@	2.10
No. 2 strong unbleached	1.70	@	1.80
No. 1 Kraft	1.50	@	1.75
No. 2 Kraft	1.40	@	1.50
Sulphate—			
Bleached	2.75	@	3.25

(F. o. b. Pulp Mill)

Sulphite (Domestic)—			
Bleached	2.25	@	4.75
Easy Bleaching	2.15	@	2.35
News	1.80	@	2.50
Mitscherlich	2.40	@	2.55
Kraft (Domestic)	1.60	@	2.75

(Delivered Paper Mills)

Soda Bleached	2.75	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.00
New White, No. 2	5.50	@	6.00
Silesias No. 1	5.25	@	5.50
New Unbleached	7.00	@	7.50
New Blue Prints	4.00	@	4.50
New Soft Blacks	3.50	@	4.00
Blue Overall	5.00	@	5.25
Fancy	3.00	@	3.50
Washables	2.75	@	3.00
Mixed Khaki Cuttings	3.50	@	4.00
Pink Corset Cuttings	5.00	@	5.50
O. D. Khaki Cuttings	4.50	@	4.75
Men's Corduroy	3.00	@	3.50
New Mixed Blacks	3.00	@	3.25

Old Rags

White, No. 1—			
Repacked	5.25	@	5.75
Miscellaneous	4.25	@	4.75
White, No. 2—			
Repacked	3.00	@	3.50
Miscellaneous	2.30	@	2.50
St. Soiled, White	1.50	@	1.75
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.65	@	1.85
Black Stockings	3.25	@	3.75
Roofing Rags—			
Cloth Strippings	1.25	@	1.30
No. 1	1.25	@	1.30
No. 2	.90	@	1.00
No. 3	.70	@	.80
No. 4	.65	@	.70
No. 5A	.50	@	.60

Foreign Rags

New Rags

New Dark Cuttings	2.00	@	2.15
New Mixed Cuttings	2.10	@	2.40
New Light Silesias	5.00	@	5.38
Light Flannelettes	5.00	@	5.25
Unbleached Cuttings	6.50	@	6.75
New White Cuttings	6.00	@	6.25
New Light Oxfords	5.00	@	5.50
New Light Prints	3.10	@	3.25

Old Rags

No. 1 White Linens	6.25	@	6.50
No. 2 White Linens	5.25	@	5.50
No. 3 White Linens	3.75	@	4.25
No. 4 White Linens	2.25	@	2.75
No. 1 White Cotton	4.50	@	5.00
No. 2 White Cotton	3.50	@	4.25
No. 3 White Cotton	2.50	@	3.25
No. 4 White Cotton	1.50	@	1.75
Extra Light Prints	1.90	@	2.10
Ord. Light Prints	1.75	@	1.90
Med. Light Prints	1.40	@	1.55
Dutch Blue Cottons	1.50	@	1.60
French Blue Linens	2.25	@	2.40
German Blue Linens	2.00	@	2.10
German Blue Cottons	1.35	@	1.40
Checks and Blues	1.40	@	1.45
Lindsay Garments	.90	@	1.00
Dark Cottons	.70	@	.75
Old Shopperies	.65	@	.70
New Shopperies	.60	@	.65
French Blues	1.40	@	1.50

Old Rope and Bagging

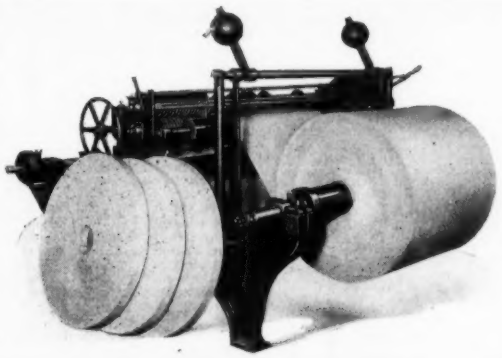
(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.55	@	1.65
Domestic	1.65	@	1.80
Wool Tares, light	1.15	@	1.20
Wool Tares, heavy	1.15	@	1.20
Bright Bagging	1.10	@	1.15
Small Mixed Rope	.90	@	1.00
Manila Rope—			
Foreign	1.75	@	1.85
Domestic	1.90	@	2.00
New Burlap Cut	1.70	@	1.80
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, white, No. 1	2.65	@	2.85
Hard, white, No. 2	2.10	@	2.20
Soft, white, No. 1	2.10	@	2.20
White envelope cuttings	2.35	@	2.50
Flat Stock—			
Stitchless	.70	@	.80
Overissue Mag	.70	@	.80
Solid Flat Book	.60	@	.70
Crumpled No. 1	.48	@	.53
Solid Book Ledger	1.75	@	1.85
Ledger Stock	.65	@	.75
New B. B. Chips	.20	@	.30
Manilas—			
New Env. Cut	1.75	@	1.85
New Cuttings	1.40	@	1.50
Extra No. 1 old	1.10	@	1.25
Print	.45	@	.50
Bogus Wrapper	.45	@	.50
Container	.30	@	.35
Old Kraft Machine—			
Compressed bales	1.20	@	1.30
News—			
No. 1 White News	1.60	@	1.65
Strictly Overissue	.35	@	.45
Strictly Folded	.30	@	.35
No. 1 Mixed Paper	.25	@	.30
Common Paper			Nominal



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Designed to meet the requirements of all users of Automatic Machines that take the stock from the roll, and require a roll of large diameter wound true and solid.

With this slitter, wide and narrow widths cut at the same time are of uniform tension. A roll slit and rewound 1″ wide and 48″ diameter can be handled without danger of spinning. At very little additional cost per ton paper mills equipped with this Slitter can furnish their customers with paper or board slit and rewound from 1″ width and up. Made in three widths: 48″—60″—72″.

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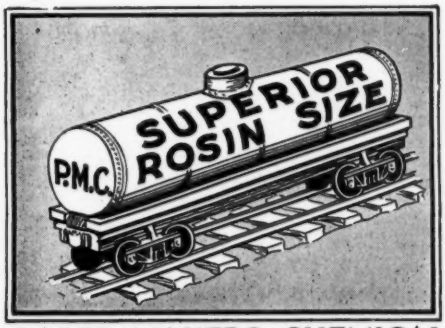

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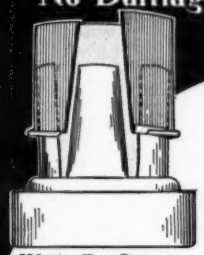

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Key enters and expands clip, producing tight grip on inside of core end. Permits running down of paper to last thickness without damage to core. Safer, more efficient and economical than ordinary wedge chucks. Made to fit standard sizes of cores and shafts.

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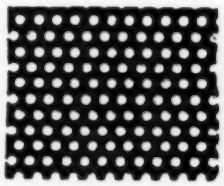
For Pulp and Paper Mills



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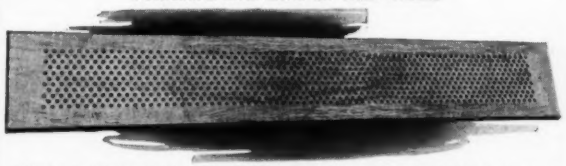

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Separators and Complete
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All Kellogg Welded Products Are Insurable

Twines

(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.13	@	—
No. 2	.11	@	—
Tube Rope—			
4-ply and larger	.09	@	—
Fine Tube Rope—			
4-ply	.11	@	—
3-ply	.12	@	—
2-ply	.13	@	—
Paper Makers Twine Balls	.07	@	—
Box Twine, 2-3 ply	.07	@	.08
Jute Rope	.09	@	.10
Amer. Hemp, 6	.27	@	.29
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.21	@	.22

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¼	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¾	@	.05¾
No. 1 Fibre	.04¾	@	.05¾
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	5.00	@	5.50
Southern Kraft	3.75	@	4.00
No. 2 Kraft	3.75	@	4.00
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07¼
White Tissue	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	57.00	@	—
Sheets	62.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cuttings	—	@	—
No. 1 Soft Shavings	2.10	@	2.15
Ledger & Writings	.70	@	.75
Solid Books	.75	@	.80
Blanks	1.60	@	1.65
Krafts	1.25	@	1.35
New Kraft Cuts	1.35	@	1.45
Manila Env. Cuts	1.50	@	1.55
Ex. No. 1 Manila	1.25	@	1.30
Print Manila	.40	@	.45
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.35	@	.40
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.28	@	.30
No. 2	.20	@	.25
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.07	@	.40
Writings—			
Superfine	.12	@	.18
Extra fine	.16	@	.22
Fine	.15	@	.26
Fine, No. 2	.12	@	.25
Fine, No. 3	.07	@	.20
Book, M. F.	.04¼	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.07	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.03¼	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¼
Southern Kraft No. 1	—	@	.04
Southern Kraft No. 2	—	@	.03¾
Common Bogus	.03	@	.04
(Delivered Philadelphia)			
News Print Rolls	58.00	@	62.00
Straw Board	50.00	@	—
News Board	30.00	@	32.00
Chip Board	25.00	@	27.50
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	63.00	@	65.00
Carload lots	62.00	@	67.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25
Khaki Cuttings—			
No. 1 O. D.	.04½	@	.05
No. 2 Mixed	.03½	@	.04
Corduroy	.02½	@	.03
New Canvas	.06½	@	.07
New Black Mixed	.03	@	.03½

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.06	@	.06½
New White, No. 2	.05	@	.05½
Light Silesias	.05	@	.05½
Silesias, No. 1	.06	@	.08
Black Silesias, soft	.05	@	—
New Unbleached	.06	@	.06½
Washable, No. 1	.02½	@	.03
Blue Overall	.05	@	.05½
Cottons—According to grades—			
Washable, No. 2	.02	@	.02½
New Blue	.02	@	.02½
Fancy	.03	@	.03½
New Black Soft	.03	@	.03½
New Light Seconds	.01¾	@	.02
New Dark Seconds	1.85	@	2.00

Domestic Rags (Old)

White No. 1—			
Repacked	3.50	@	4.00
Miscellaneous	2.25	@	2.75
M. G.	4.50	@	—
Thirds and Blues—			
Miscellaneous	1.25	@	1.50
Repacked	1.75	@	2.00
Black Stockings (Export)	3.80	@	4.00
Roofing Stock—			
Foreign No. 1	1.15	@	1.25
Repacked	.80	@	.90

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	2.25	@	2.50
Sisal Rope	1.25	@	1.50
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.30	@	2.50
No. 2 Hard White	2.00	@	2.25
No. 1 Soft White	1.75	@	2.00
No. 2 Soft White	1.40	@	1.50
No. 1 Mixed	.75	@	.80
No. 2 Mixed	.50	@	.55
Solid Ledger Stock	1.35	@	1.40
Writing Paper	.80	@	1.00
No. 1 Books, heavy	.70	@	.75
No. 2 Books, light	Normal		
No. 1 New Manila	1.60	@	1.75
No. 1 Old Manila	1.25	@	1.30
Print Manila	.50	@	.55
Container Manila	.40	@	.45
Old Kraft	1.10	@	1.20
Common Paper	.30	@	.40
No. 1 Mixed Paper	.35	@	.45
Straw Board, Chip	.35	@	.45
Binders Board, Chip	.35	@	.45
Corrugated Board	.45	@	.50
Overissue News	.50	@	.55
Old Newspaper	.30	@	.35

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag Content	.15	@	.30
All Rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.0e	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06¼
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05½
No. 2 Kraft	.03¾	@	.04½
(F. o. b. Boston)			
Southern Kraft	.03¾	@	.04
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¼
(Delivered New England points)			
News Print, rolls	—	@	56.50
Straw Board, rolls	.009	—	@52.50
Straw Board in Sheets, basis 35s to 70s	—	@	50.00
Filled News Board	27.50	@	30.00
Chip Board	27.50	@	—
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip	40.00	@	45.00
Single White, Patent Coated News Board—Binder	52.50	@	60.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	67.50	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.50
No. 2 Hard White	2.25	@	2.50
No. 1 Soft White	1.90	@	2.10
No. 2 Mixed	.60	@	.65
No. 1 Mixed	.90	@	1.00
Solid Ledger Books	1.75	@	2.00
Overissue Ledger Stock	1.35	@	1.60
Mixed Ledgers	1.15	@	1.30
No. 1 Books, heavy	.65	@	.75
No. 1 Books, light	—	@	.45
Crumpled Stitchless Book Stock	1.00	@	1.25
Manila Env. Cuttings	1.85	@	2.00
No. 1 Old Manila	—	@	1.00
White Blank News	1.50	@	1.60
Kraft No. 1	1.15	@	1.20
Manila	.90	@	1.00
No. 1 Mixed Paper	.25	@	.35
Print Manila	.40	@	.45
Overissue News	.40	@	.45
Old Newspapers	.32½	@	.40
Box Board, Chip	.16	@	.20
Corrugated Boxes	.37½	@	.47½

Bagging

(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.55	@	—
Domestic	1.50	@	—
Manila Rope—			
Foreign	1.50	@	1.75
Domestic	1.75	@	2.00
Transmission Rope	1.25	@	1.40
Mixed String	.50	@	.55
Jute Rope	1.00	@	1.15
Jute Carpet Threads	.75	@	.90
Bleachery Burlap	2.50	@	2.75
No. 1 Scrap Burlap	1.10	@	1.25
Scrap Sisal	1.35	@	1.45
Scrap Sisal for shredding	1.50	@	1.60
Wool Tares, heavy	1.25	@	1.30
New Burlap Cutting	1.50	@	1.25
Australian Pouches	2.00	@	2.25
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging	.90	@	1.05
Bagging No. 2	.50	@	—
No. 1 Burlap	—	@	3.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1.	.06½	@	.07
New White No. 2.	—	@	.06
Silesias No. 1	.06	@	.06¼
New Black Silesias	.02½	@	.02¾
New Unbleached	—	@	.08
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades—			
Blue Overalls	.05	@	.06
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04½
O. D. Khaki	.04½	@	.05
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	—	@	4.00
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.50	@	2.75
Thirds and Blues—			
Repacked	1.60	@	1.80
Miscellaneous	1.00	@	1.20
Black Stockings	3.25	@	3.50
Roofing Stock—			
No. 1	—	@	.63
No. 2	—	@	.58
No. 3	—	@	.53

Foreign Rags

(F. o. b. Boston)

Dark Cottons	—	@	.70
New No. 1 White Shirt Cuttings	6.50	@	6.75
Dutch Blues	—	@	1.80
New Checks & Blues	4.00	@	4.50
Old Fustians	1.55	@	1.65
Old Linsey Garments	.80	@	.90

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¾	@	—
No. 2 Sulphite	08½	@	—
No. 1 Colored	.11¼	@	—
No. 2 Colored	.09	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	6.65	@	—
No. 3 M. F. (carloads)	6.20	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.65	@	—
No. 4 S. C. (carloads)	5.70	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.50	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft No. 2	5.40	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	56.50	@	57.00
Sheets	61.50	@	—

Pulp

(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	50.00	@	—
Sulphite, news grade	44.00	@	—
Sulphite, bleached	62.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.80	@	—
Soft White	2.60	@	—
White Blk. News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.10	@	—
Light and Crumpled Book Stock	1.20	@	—
Ledgers and Writings	—	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	.80	@	—
Kraft	1.90	@	—
News and Scrap—			
Strictly Overissue	.70	@	—
Strictly Folded	.70	@	—
No. 1 Mixed Paper	.60	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¼

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for STEAM (High pressure superheat) Compressed Air

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for HYDRAULIC PRESSURES

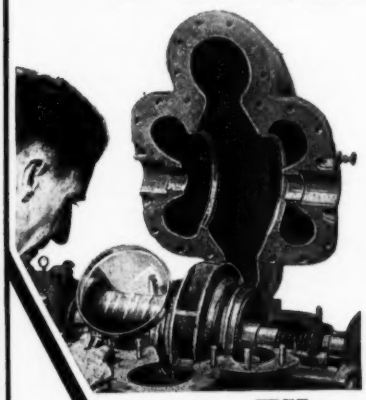
The Fluid you pump should determine the packing you use

THE packing-bearing surface of the shaft of the high-speed centrifugal pump must be kept under constant lubrication to avoid the friction that wears the shaft and destroys the packing.

To retain the necessary lubricant to avoid friction, a packing must be lubricated with a compound that will resist the washing-out tendency of various chemicals and distillates of petroleum.

NO ONE LUBRICANT WILL RESIST ALL FLUIDS

These packings will give long, economical service against the various fluids as stated.



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for CAUSTIC SODA SIMILAR CHEMICALS *and* AMMONIA

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PAPER TRADE JOURNAL

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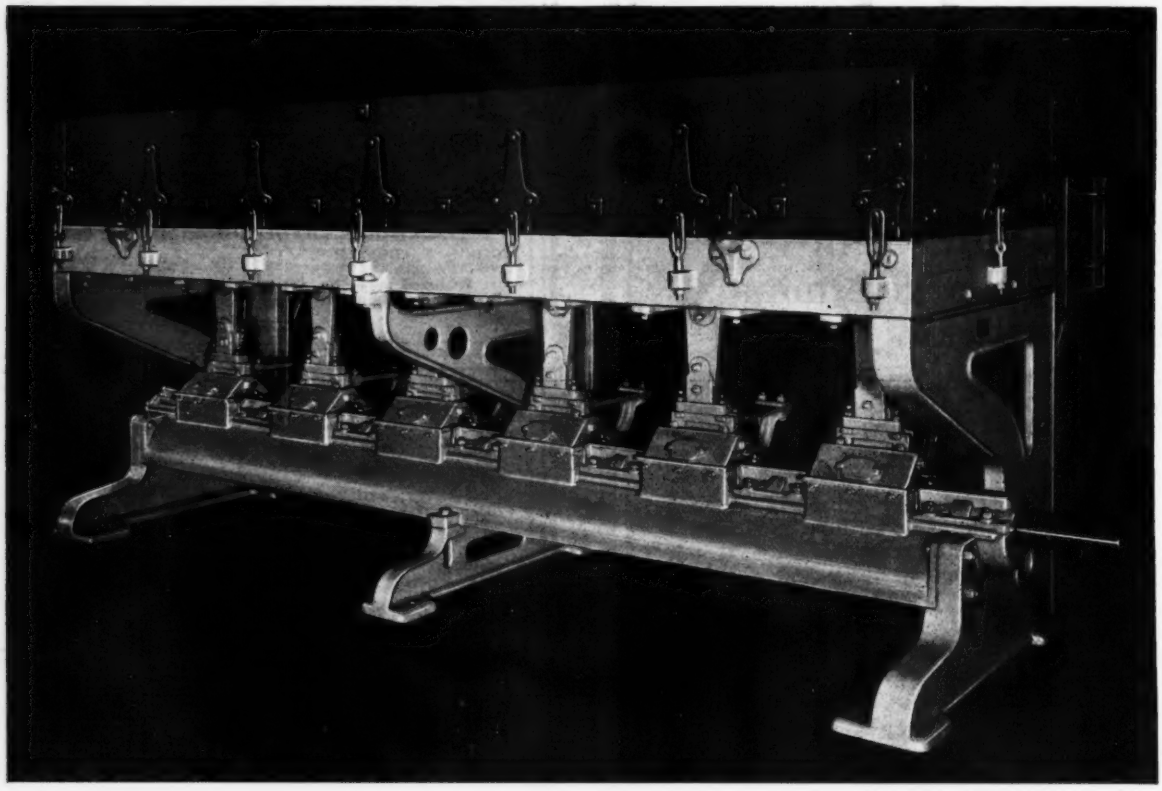

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